DOCUMENT RESUME

ED 078 632 EC 052 188

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|---|---|
| TITLE | Exceptional Children Conference Papers: Education of the Educable Mentally Handicapped. |
| INSTITUTION | Council for Exceptional Children, Arlington, Va. |
| SPONS AGENCY | Bureau of Education for the Handicapped (DHEW/OE), Washington, D.C. |
| PUB DATE | 73 |
| NOTE | 157p.; Papers presented at the Annual International CEC Convention (51st, Dallas, Texas, April 22-27, 1973) |
| EDRS PRICE | MF-$0.65 HC-$6.58 |
| DESCRIPTORS | *Behavior Change; Cognitive Development; Conference Reports; Context Clues; *Educable Mentally Handicapped; *Exceptional Child Education; Institutes (Training Programs); Mentally Handicapped; Money Management; Motor Development; *Program Descriptions; Reading Comprehension; *Teaching Methods; Training Techniques; Vocational Education; Word Recognition |

ABSTRACT

Nine conference papers focus on education of educable mentally handicapped (EMH) children. A prototype evaluation of procedures for teaching reading comprehension involves assessment of 96 EMH or normal students' skills in identifying main and supporting ideas in connected discourse. Described is the Lincoln School's behavioral management system for EMH students, which stimulates the American capitalistic system through teacher development of a realistic environment, wherein students establish governing rules, and receive pay for good work and behavior. Reported are studies of contextual analysis and concept learning of normal and retarded children. Results of a token economy to develop money management skills in EMH students 12- to 17-years-old indicate higher competency levels in functional mathematics. Provided is a basis for assessing and programing retarded children's cognitive and motor development from infancy through 7 years of age. Described as adaptable for institutional or agency use is a model which evolved from a teacher's workshop in Pennsylvania in preparation for teaching previously excluded EMH children. Discussed is the Charles Carroll Occupational School's program for EMH boys, which offers prevocational and vocational education, and work study experience. Six of eight EMH girls are reported employable as maids after a 6 week training program, which included class and on-the-job training, slide presentations, and a pictorial manual. A prototype evaluation of procedures for teaching word meaning skills to EMH and normal pupils centers on 2 years' research on synonyms and homonyms. (MC)

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# The Georgia Reading Research Program: Special Reading Instructional Procedures for Mentally Retarded and Learning Disabled Children[1]

## Prototype Evaluation of Procedures for Teaching Reading Comprehension Skills to Mentally Retarded Children

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Prepared for Presentation at the Council for Exceptional Children Annual International Meeting

April 22-27, 1973
Dallas, Texas

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[1]The research reported herin was performed pursuant to a grant from the National Institute of Education. U.S. Department of Health, Education, and Welfare (NIE No. 20234C. Contract No. OEG-0-71-4157 (607)). Grantees undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

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# Prototype Evaluation of Procedures for Teaching Reading Comprehension Skills to Mentally Retarded Children

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During the first year of the Georgia Reading Research Project we conducted two sets of studies dealing with comprehension skills. One set of studies investigated normal and mentally retarded children's performance in identifying the main idea in connected discourse; the second set of studies was concerned with their performance in identifying supporting ideas in connected discourse. The Ss' performance on these two reading skills was examined under variant instructional techniques for focusing attention: preview summaries vs coding of material and preview summaries vs preview questions.

## Background

When we cross-connect the reading domain and the verbal learning and language domains, we see that identifying main and supporting ideas involves dealing with longer selections in the area of connected discourse. A number of variables influence dealing with connected discourse. One variable is attention-focusing. Several methods for focusing readers' attention have been studied. We looked at two methods: form of preview and organizational clues.

Form of preview refers to type of materials placed before the selection. Questions and summaries are frequently-used variants. Previous work on this problem has been done by Frase, Patrick, and Schumer (1970), and by Huttenlocher and Strauss (1968). Organizational clues refer to devices for pinpointing the main or supporting ideas within the selection. One often used procedure is

marking the idea with italics. Previous work on this problem has been done by Dooley and Harkins (1970), Thomson and Turving (1970) and by Turner and Rommetveit (1968).

Retarded students have been found to have greater difficulty than normal students in grasping directly stated and implied ideas (Blake, Aaron, and Westbrook, 1969; Dunn, 1954; Frase, 1969; Suchman, 1966). Similarly, retarded subjects do have attention deficits which need compensation (Zeaman & House, 1967). During the first year of our study, then, we concentrated on certain instructional techniques which might influence subjects' attention.

## Procedure

Two studies were conducted for each of the reading skills: (1) Identifying main ideas and (2) Identifying supporting ideas. In each study the instructional objective was: Given prose selections more than one paragraph long, the student can read materials at least one reading instructional level (RIL) above his entering RIL and identify the main (or supporting) ideas with 100% accuracy.

Instrument. The same instrument was used in all studies. The instrument consisted of preview material, reading selections, and multiple-choice test questions. The selections were multiple paragraph in length and focused on a single main idea and several supporting ideas and details. In each selection, the main and supporting ideas were stated, not implied. There were two selections at each reading instructional level (RIL) 2 through 12, making 22 selections. Administration was scheduled over multiple data collection sessions. The method of limits (similar to that used on the

Stanford-Binet) was used. Each student began with the selection at his RIL (reading instructional level) and continued reading until he failed two consecutive RIL's.

The questions were a set of multiple-choice items sampling the main idea and the supporting ideas of the prose selection. Content validity was obtained by basing the items on the behavior specified in the instructional objective and the content of the prose selection.

For the two studies dealing with preview summaries vs preview questions, subjects were instructed to read each preview (either summaries or questions) and its prose selection. Then, they were asked to identify, by answering the multiple-choice questions, the main or supporting ideas portrayed in the materials. Reading rate was not stressed; time allotments were liberal (20-25 minutes per selection).

For the two studies dealing with form of preview and coding, preview questions preceded all prose selections in which the main or supporting ideas were italicized; preview summaries preceded all prose selections in which main or supporting ideas were not italicized.

Subjects. Ninety-six (96) subjects participated in each of the four studies. Three groups of subjects were employed: (a) mentally retarded students, (b) intellectually normal students equated on MA (younger normals) with the retarded; and (c) intellectually normal students equated on CA (older normals) with the retarded. Selection criteria and other descriptive information about the subjects have already been given and are described by Allen (1973). All research design requirements relevant to equivalent IQs, MAs, CAs, and RILs were met.

Evaluation. In each study the response measure was the subject's accuracy in selecting from multiple options the main idea (or supporting idea) for the given prose selections. The possible score for main ideas was 24. The possible score for supporting ideas was 72.

Data from each study were treated separately. To assess students' attainment of the instructional objective, a chi-square analysis was made of frequencies of subjects attaining an instructional level equal to or greater than one year above their entering instructional level. To look at the effects of groups and treatments, a treatment by levels analysis of variance model was used to treat scores on the tests covering the selections.

## Results and Discussion

The results of each study are summarized and discussed below. The interested reader may refer to Blake (1973), Dunman (1973), Little (1973), and Richmond (1973).

### Preview Summaries and Preview Questions

Background. Previewing focuses attention selectively. In contrast to summaries: on the positive side, questions should lead to more active involvement and to practice with the material in the form it will be tested; on the negative side, questions may lead to more frustration and interference. The reverse of this describes advantages and disadvantages of summaries.

The question in two of the studies then was: Do the two procedures for influencing attention have a different effect on finding main ideas (or supporting ideas) in the selection? Let's look first at the effectiveness of these methods in identifying the main idea.

a. Identifying Main Ideas. Both types of orienting materials, questions and summaries, were useful in focusing subjects' attention on the main ideas. The two types were similarly effective. In all groups and treatments, a majority of the pupils reached the criterion. The chi-squares were not significant; that is, the groups and treatments did not differ in frequencies of subjects reaching the criterion. Within both treatments, the older normal exceeded the other two groups and the younger normal exceeded the retarded. Inspection of data reveals that many subjects reached the top of the task, the task ceiling. It is reasonable to question whether differences would occur if the task were harder, e.g., dealing with implied ideas, dealing with completion tests rather than multiple choice tests. Subsequent studies will be devoted to such matters.

b. Identifying Supporting Ideas. Similar results were obtained. The three groups differed in identifying supporting ideas and details. Older normals scored higher than younger normals and retardates, and younger normals scored higher than retardates. The results for treatments indicate that questions and summaries are similarly effective in reading for supporting ideas and details. The instructional objective was reached by 69% of those

students receiving questions and 74% of those receiving summaries. No differences were found in a chi-square analysis by levels and treatments of frequencies of students meeting the instructional objective.

Further research is needed to determine if these findings are applicable to other types of materials and different dimensions of this skill (e.g., implied supporting ideas and details). Additionally, the use of single paragraphs might yield different results. The failure of the subjects to meet the instructional objective indicates the need for additional research and consideration regarding this topic. Factors to be considered should deal with length of selection, type of question, forms of preview, etc.

## Preview Summaries and Coding

Background. Since the two forms of preview in the above studies were equally effective, we turned our attention to the differential effectiveness of form of preview (using preview summaries) and organizational clues (coding ideas through italics) in identifying both main ideas and supporting ideas. The question for these studies was: Which attention-focusing techniques are more effective for retarded and normal subjects in the identification of main or supporting ideas?

a. Identifying Main Ideas. There was no significant difference between treatments nor was there a significant interaction between groups and treatments. Both coding and preview summaries are equally effective.

The three groups differed significantly in performance. Older normal subjects scored higher than either the younger normal or retarded subjects, and the younger normal subjects scored higher than the retarded.

Chi-square analyses of groups and treatments revealed no significant difference in frequencies of subjects meeting the instructional objectives. Most of the Ss attained or surpassed the instructional objective of the study whether they received summaries or coding.

Certain manipulations of the independent variables, such as decreasing the length of the prose selections, increasing the number of selections, increasing the difficulty of the selections, increasing the number of test items or changing the item format (e.g., completion items) are further areas needing investigation.

b. Identifying Supporting Ideas. Similar results were obtained. The two treatments did not differ significantly in effectiveness. Both preview summaries and coding were equally effective. The Three groups differed significantly in performance: the retarded students achieved less effectively. The older normals achieved at a level higher than the younger normals.

Chi-square analyses of the frequencies of students reaching the instructional objective were not significant; a majority of subjects in the three groups reached the instructional objective.

## Conclusions

1. Preview questions and preview summaries were equally effective for all pupils in finding main and supporting ideas in connected discourse. For both treatments, CA-equated normals scored higher than did MA-equated normals and retardates while MA-equated normals scored higher than did retardates.
2. Preview summaries and coding by italicizing main and supporting ideas were equally effective for all pupils in finding main and supporting ideas in connected discourse. Within both treatments, the CA-equated normals exceeded the other two groups and the MA-equated normals exceeded the retardates.

## Present Directions

We have increased the amount of work we are doing on the comprehension skills. During the second year we have conducted 24 studies of comprehension with the retarded target group and 7 studies with the learning disabled target group. We are continuing our work in identifying main and supporting ideas in connected discourse and have extended our work to four additional skills--context analysis (connected discourse), recalling and comprehending sentences, learning through sentences, and learning through connected discourse--directions. An outline of the topics we are investigating with each group is presented below.

# Outline of Year II Studies in Comprehension Skills

I. For the Mentally Retarded Target Group

A. Identifying Ideas (Connected Discourse)

1. Types of questions/main ideas
2. Types of summaries/main ideas
3. Types of outlines/main ideas
4. Types of organization/main ideas
5. Forms of preview/main ideas
6. Types of questions/supporting ideas
7. Types of summaries/supporting ideas
8. Types of outlines/supporting ideas
9. Types of organization/supporting ideas
10. Forms of preview/supporting ideas
11. Type of illustration/time relationships
12. Amount of material

B. Context Analysis (Connected Discourse)

1. Training in identifying form classes and recognizing types of relationships.
2. Types of responses/STM: Paradigmatic and Syntagmatic

C. Sentence Comprehension and Recall (Connected Discourse)

1. Instructional methods/transformations
2. Type of transformation: Kernal, passive, negative, question, PN, NQ, PQ, and NPQ
3. Amount of feedback: Response and stimulus-response feedback
4. Type of recitation: Oral and written
5. Completion sequence: First half and second half
6. Amount of material: 4 sentences and 8 sentences
7. Amount of practice: 4, 8, and 12 trials

D. Learning from sentences (Connected Discourse)

1. Meaningfulness of material: English and paralogs
2. Order of presentation: Name--description and description--name
3. Test type: Completion, multiple choice and TF

II. For the Learning Disabled Target Group

A. Connected Discourse

1. Type of coding: Black and color
2. Amount of material: 4 paragraphs and 6 paragraphs
3. Type of illustration/time relationships

B. Sentence Comprehension and Recall

1. Type of transformation: Kernal and passive-negative questions
2. Amount of feedback: Stimulus--response and response feedback
3. Amount of practice: 4, 8, and 12 trials

C. Learning from sentences

1. Completion sequence: first half and second half

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ED 078632

# The Lincoln School System of EMR Behavior Management — Simulation of Private Enterprise in a Democratic Setting

Presentation by Brian R. Bender
Session 100 Rooms N233 & N234
8:45 to 10:15
Friday, April 27
Council for Exceptional Children Convention
Dallas, Texas

THE LINCOLN SCHOOL ECONOMY SYSTEM

The Lincoln School Economy System is based on certain definitive suppositions;

1. The method involved is an expanded social exchange program based on the capitalistic design provided by American society, simply, that one earns a day's pay for a day's work. He receives this "pay" immediately and is free to spend it when and as he sees fit.

2. The system is applied by all teachers in the school using techniques of behavior modification. No teacher is solely responsible for her immediate classroom.

3. If in a democratic society one is expected to participate in representative government, students must become participants in the learning process as well as recipients. They must have something to say about the structure of the school system in which they are expected to perform.

4. Corporal punishment does not exist in a system given impetus solely by positive reinforcement.

SETTING UP THE ECONOMY SYSTEM

Each classroom teacher, at the onset of the school year, discusses with her students the capitalistic system of earning and spending. She attempts to relate this concept to the manner in which American society operates. Mothers and fathers work in order to provide for their families. They seek employment and are paid for performing certain work units. They are also rewarded for extra work if they choose to perform such. They may spend what they earn in any manner they s ee fit to meet their immediate and future needs. Saving for immediately unobtainable goals is practiced.

The class learns that they will be "paid" for performing certain designated (and frequently negotiated) units of work appropriate to the purpose of a school. The teacher assumes the role of employer; the student, the employee. The child is given various "points" for successfully completing assignments he has previously accepted. He may spend points he has earned for numerous activities, privileges and tangible items arranged by the students and teachers. He may also "spend" points for rule violation(s). (Explained later on).

In effect, the child is being "paid" for his performance, taught to save and budget his earnings and permitted to spend them for things he finds desirable.

~~points see page~~

The manner in which a teacher presents the economy system to her class will depend to a large degree on the sophistication of the group. Our experience at Lincoln has shown that very young EMR children readily understand earning and spending. Care must be taken not to expound on the strengths or weaknesses of capitalism, but to present it only as a reality in American society. Caution must also be used when dealing with a student population whose families do not work, or exist solely on welfare.

THE POINT SYSTEM

Children earn points for:

1. Completing academic and non-academic assignments
2. Appropriate behavior

Children spend points for:

1. Tangibles, privileges and group activities
2. Pre-determined inappropriate behavior

The economy system is devised so that children may earn and spend points for specific behaviors, pre-determined by them and their teacher. These are academic, non-academic and social behaviors. The class establishes rules of self-government. This is accomplished through discussion and attempts to consider the attitudes and values of all the children involved. Interestingly, we have found that children will usually set rules for themselves that have traditionally been imposed by teachers! There appears to be something innate to the educational system that determines what is appropriate and inappropriate behavior for those involved in it. Most children come to school aware of what is expected of them; it seems to be their disappointment in what they find that causes deviant behavior. Mothers have impressed their children with words like, "Listen to your teacher and she will teach you many things." This is mentioned not as an over-simplification, but to illustrate two points:

1. The school often fails to capitalize on children's initial enthusiasm for learning because of its authoritarianism which manifests itself in its failure to involve children in the decision-making processes.

2. The skeptic must be assured that attempts at student self-government do not necessarily result in chaos.

A look at the student imposed rules of conduct, which are always written and displayed prominently on each classroom wall at Lincoln, reveals little variance from group to group or age to age, and interestingly, are probably the same rules the teacher would have imposed had she been given the opportunity. It is not suggested that children will automatically obey the rules they have created, only that they will understand them better and seldom question their validity when they have had a part in their construction.

POINTS - WHAT ARE THEY?
HOW AND WHY ARE THEY USED?

Points are symbols of children's productivity. A child works for points, not the grades or special privileges traditionally associated with schools. The point is meaningful because he is able to control its usage. He can spend it immediately or save it. It provides a means to refreshment, leisure or entertainment. Its value is easily understood and offers immediate reinforcement for appropriate school behavior. No one demands that he learn; they only create opportunities for earning points. No one criticizes him for not learning; he simply does not capitalize on opportunities to earn points. The point system provides a concrete cause-and-effect relationship between what one produces and then receives, something a grade cannot do for all children.

Each classroom must develop a meaningful point system. Obviously, six year olds with limited number concepts cannot understand points with numerical values! The manner in which they are presented and spent must directly reflect the number abilities of the children receiving them. If the number concept of five is being taught, have the point system reflect it. If the children have no number concepts, introduce them with a practical alternative. Some teachers present very young children with "tickets" for completing assignments. A task or group of tasks is

worth a pre-determined number of "tickets". The children collect them and spend them as they wish. Some classrooms use a rubber-stamp technique. On the completion of an assignment, the teacher permits the child to stamp in a folder he creates for the purpose, an appealing ink design. These can be accumulated then marked-out when spent. Gummed stars and characters can also be used.

Some classrooms operate on a high-point system. Points are earned in quantities of 100 or more since this is the number concept the teacher is attempting to teach. Less mature children may be involved in a low-point system where points earned seldom exceed ten at a time.

Points are a universal motivator but to be so they must represent a variety of spending alternatives. If the teacher permits children to spend their points only for candy, she does not need points but can provide candy. Teachers who criticize points as unrealistic motivators are teachers who have been unable to provide sufficient reason for the child to earn them!

Immediately the educational purist will cry, "Whatever happened to learning for the sake of learning; the joy of academic accomplishment!" Nothing, but before intrinsic motivators are discovered one must capture the child's attention!

Education was once looked upon as a ticket to economic success and the solution to society's ills. Many people today take exception to these thoughts and feel

our present educational system has failed in its attempts to provide a better life for them. It often ignores principles of growth and development and is subordinate to administrative expediency only. Unfortunately it also tends to perpetuate its inadequacies! When teachers or administrators do not know how to meet the immediate needs of children they revert to what was done to them (which was probably less than optimal.) In this manner the system tends never to change....one wrong prolongs another. It reflects not only educational confusion but life-style. Educators evolve, for the most part, from that group in our society which places value in the "American Dream". Their ethic is basically conservative, their life-style unpretentious and presumably altruistic and their goals revolve around some middle - class mystique that places premium on hard work as a means to personal and material happiness. They begin to impose their values on others, not maliciously but unthinkingly with good intentions. If teachers are met with resistance by children who do not understand these principles, they (teachers) find their values rejected and frequently react emotionally. What results is a breakdown in intellectualism and the emergence of a dominant undercurrent of anti-intellectual thought that infects the educational system. The simple-minded person. whether educator or not, who believes something is true only because his personal philosophy of life and life-style tells him it is true is sadly misguided! To rely on some "down-home",

common-sense, personal ethic or absolute defies intellectualism and places judgments and decisions made about children in the realm of the emotional which is more likely to meet the needs of the teacher than the child. This procedure probably occurs daily and is as much a function of our educational system as the educators who perpetuate it!

In order to overcome the clammy, dead hand of tradition we must concentrate on <u>why</u> we teach what we teach as well as <u>what</u> should be taught. To do so we de-emphasize the cognitive function of learning as the major purpose of the school and move toward the affective function of learning. We will learn to develop curriculum that deals with student's concerns as well as their interests, and to think of an educational experience as something that will affect a change in a child's behavior remembering that it is primarily <u>his</u> life-style not ours, that dictates <u>his</u> needs.

> ".....a <u>curriculum must give equal emphasis to affective and cognitive content</u>. For years the school's role has been primarily to dispense knowledge, packaged according to subject matter. If you ask a high school instructor what he does for a living, he is likely to reply, "I'm an English (social studies, science, French) teacher". Accordingly, we tend to view the role of the teacher in terms of the subject-matter dispensed. Questions such as "Why do I feel the way I do?" "What do others think of me?" "Do I care?" "Why do I want to do that?" "Who am I?" and "What can I do about things I don't like?" are legitimate in a curriculum concerned with the whole child. But rarely has the curriculum formally recognized the importance of the learner's feelings, concerns or fears. Yet there is considerable psychological evidence that unless feelings are acknowledged they may impede learning.

> We would argue, however, that an affective curriuclum is legitimate in its own right, irrespective of its tie to cognitions. Unless a person has learned to recognize his fears, wants, anxieties, concerns, needs and pleasures, and has either accepted them or learned to cope with them, he will be incomplete as a human being. One of the major reasons for the current popularity of the "human potential" movement is that our schools have virtually ignored this area of life. As a result, many college students and adults are attempting to compensate for a need that should have been fulfilled many years earlier.[3]

The purpose of education is to teach children to COPE with themselves and with their environment. Ideally, they must learn to select from their surroundings those things immediately necessary for their survival and this must be accomplished quickly, independently and without disturbing the rights or needs of others. They must be capable of moving within their group without interference, with minimal effort, but with confidence. COPING is the result of a progressive, sequential series of learnings. It permits the child better understanding of his immediate experiences, internalizing his successes and failures and using them to COPE with later experiences.

It should be noted that we have indicated that children must learn to cope with <u>their</u> environment, not <u>ours</u>! This statement evokes a shocking realization.....we may not know what a child needs to cope within his environment. The disparate social structure found in any classroom makes this knowledge impossible to generalize. There is little evidence that the values one of us holds about

3. Ryan, Kevin & Cooper, James M., Those who can, teach, Houghton Mifflin Co. Boston, Mass., 1972, p. 118

his life and culture have relevance to others. It is absurd to assume that professional educators are capable of translating their needs to those of all children, for to do so is to assume the existence of absolute values, something no one may do fairly!

If a teacher is to learn, in order to teach, she must create life situations within the classroom and observe her students react to the demands placed on them. She must study a child's interpersonal relationships and assist him in making decisions that are beneficial to both himself and his peer group. Above all, she must discover the integrities that permit him success and use these to enhance his self-concept.

To convert these theoretical suppositions to practical applications, the teacher needs a precise method of implementation. The economy system is such a method because it permits the teacher to create realisitic life situations within a classroom. Representative government is being practiced, not illustrated. Children participate in their education, rather than just have it "talked at them." One is free to make decisions and then consider with others the decisions he has made. The emphasis on involvement and freedom of choice and expression encourages the natural emergence of those questions of concern, "Do I care?" "Why do I act like I do?" "What will happen to me some day?" The "curriculum of affect"

begins to evolve spontaneously and naturally.

If the economy system is the method, points are the inherent devices that make it work. Points provide the motivation for academic production, present a system for objectively recording behaviors and, most importantly, create dialogues concerning interpersonal relationships between children and teachers---dialogues precipitated by immediately comprehensible stimuli.

Whether one feels points are extrinsic or intrinsic motivators is irrelevant. Our society appears to place an increasingly insignificant premium on pride of workmanship. It acknowledges the craftsman but more importantly, does little to distinguish him from the tradesman. Our specialized, highly mechanized culture places more emphasis on productivity than quality. The assembly-line worker is motivated by salary and probably receives little sense of accomplishment from installing a left-front headlight rim on a new automobile. We have de-personalized the contribution our labor force makes to its product through production techniques. As a result, we have been able to raise the standard of living for most of our countrymen. We have created a nation of consumers. The educator must do the same by applying the motivators of industry (salary) to make its product salable to all children (consumers). The necessary difference is that education, unlike business, must not ignore the social and emotional needs of children for the de-

mands of academic productivity; nor should it stress quantity to the exclusion of quality.

EARNING POINTS

A teacher contracts* with each child for a certain amount of legitimate academic and non-academic work each day. For the work the child successfully completes he is given "points". The points are awarded at the time the assignment is completed. Various systems of recording points have been devised by Lincoln teachers. No one way has proven most successful, but is more a matter of teacher preference. One point that can be considered is that since children frequently want to see the number of points they have available to spend, it becomes quite bothersome to the classroom teacher if the total is kept in an obscure place, away from the immediate scrutiny of the child. Most teachers have devised charts where points are recorded in various denominations and displayed openly so that a child may immediately read his total and the teacher may quickly record earnings and expenditures. However, the competitive spirit fostered by revealing one's points to others may have negative influences on some youngsters so the teacher may wish to use a less public system.

A seemingly less objective method of awarding points is the arbitrary gift from a teacher for appropriate behavior. These "gifts" however, are usually presented for the antithesis of violating the rules set by the class to govern their behavior and are in actuality presented quite objectively. For example, two children

fight - this violates a class rule so those who did not fight may be given points. To carry this a bit farther---if on a given day no one fights, the entire class may be given points for upholding their rules. One awards points for positive behaviors only.

SPENDING POINTS

Children may spend points for a variety of tangibles, privileges and group activities. A rather extensive "List of Spending Alternatives" ~~is included in~~ has been compiled by Lincoln teachers. ~~this report~~ The list is by no means complete. It is limited only by a teacher's imagination, school setting or sophistication of her class. The key to developing a spending program is faculty involvement. Many tangibles and privileges can be organized exclusively by the classroom teacher, but group activities require staff cooperation. Further examination of spending alternatives is necessary.

1. Tangibles - those things the child can easily appraise in terms of value. Most behavior modification programs mention tangible rewards. Examples of teachers awarding plastic tokens to children for appropriate behaviors, then permitting their exchange for candy and inexpensive toys, flood behaviorist literature. Tangibles include some primary reinforcers, that is, those related to biological needs. Food and drink are prime illustrations. A child may "buy" a drink of water. He is not deprived of this basic need, but required to purchase it in excess of normal usage. Since primary reinforcers make up such a small quantity of reinforcing stimuli, most tangibles used by the classroom teacher are those not related directly to biological needs. These are called secondary reinforcers.

Tangibles are kept in the classroom clearly labeled as to their point value. A

workable system is to convert the monetary value of the tangible to a standard point value. For example, a penny is worth five points, thus a five cent candy bar is worth twenty-five points. A twenty-five cent toy is worth 125 points. This is mentioned facetiously, but some teachers have been successful converting points to money value and buying a child something he wants for that amount. (One child asked for a pair of tennis shoes, earned 1000 points and was taken to a local discount store where the shoes were purchased for $2.00.)

One teacher found many children in her room to be irresponsible with pencils, crayons and other instructional materials. If they "lost" their pencil she would "rent" them one for twenty-five points, then return the points when they returned the pencil, often giving them an extra five points for "taking care of it".

The immediate question raised is where do teachers get the tangibles? Most are purchased from personal funds. Their willingness to spend their own money is motivated by the fact that the economy system and its provision of rewards is quite successful in developing appropriate classroom academic and social behavior. In effect, it becomes an investment in successful teaching. An excellent example of this statement was found in one classroom where two especially complex boys who responded poorly to more reasonable behavior modification techniques were finally approached with a potential visit to a local amusement park when they each earned

8000 points. Immediately a rather remarkable change in social behavior was noted and academic output increased considerably. One of the boys earned the 8000 points well before the target date, the other came very close. The teacher awarded bonus points to both because neither had engaged in any major anti-social behavior requiring gross expenditure of their points during the period they were working toward their goal. This permitted the child who had not earned quite enough (through no fault of his own...due to baby-sitting responsibilities at home resulting in non-attendance at school) to accompany his friend and teacher. Interestingly, school attendance for one of the boys increased fifty percent over the two previous months. Teachers at Lincoln noticed a marked improvement in social behavior and the bus driver managed to contain both, without suspension for the period they worked on their contract. However, the cost of amusement park admissions came to nine dollars which the teacher absorbed.

It is not suggested that teachers must be willing to spend their own money to make this system work. Quite to the contrary, it is hoped that any teacher could survive a school year relying entirely on school district funds. But realistically, everyone who teaches, will probably encounter some personal cash outlay during a school year whether or not they are involved in a behavior modification program. The U.S. Internal Revenue Service calls these "Uncompensated Professional Expenses"

and allows a miscellaneous deduction. What is suggested is that teachers should carefully evaluate their purchases. It is frequently amusing to observe the teacher who will purchase such items as bulletin-board idea books and posters so that she may decorate her room when children could easily be asked to perform this task using supplies furnished by the Board of Education. The same cash outlay could have been directed toward certain tangibles which children rather than teachers find meaningful.

Yearly personal expenses may not be as great as one initially assumes. Teachers at Lincoln contribute $10.00 each to a behavior modification expense account. This amounts to approximately $140.00 yearly. A committee then pours over catalogs from national carnival supply houses and finds inexpensive tangibles that can be purchased at a great saving when bought in bulk quantities. (Straw hats, a very popular item, sell for less than ten cents each when purchased by the gross.) Usually, this expenditure will meet the year's needs. It is not inconcievable that these purchases could be met with school district funds, providing teachers justify their needs.

The exclusive use of tangible rewards presents two major problems. First, as has been discussed, it is expensive. Secondly, it is extremely difficult to predict what each child will be motivated to work for. Candy or toys may mean little to

some children, whereas a pair of tennis shoes will excite them. If one has purchased a large quantity of toys, then finds that her class is disinterested in them, the money has been wasted. Satiation is a common phenomenon in any behavior modification program. The child's maturity must be considered when selecting any reward. Most teachers prefer to treat the awarding of a tangible exclusively on its personal worth to the individual who shall receive it.

As a result of these problems most of the Lincoln staff use tangible rewards sparingly and concentrate on other alternatives.

2. Privileges - those things a child feels are special rights, advantages or favors.

There are many innocuous classroom activities that fascinate children. (It is amazing how children will spend points. One ten-year-old at Lincoln spent 200 points each week to talk to the principal for fifteen minutes, even though involved with him frequently during a typical school day.) Buying "free-time" is one of the most popular "privileges", not free time to wander aimlessly around the classroom disturbing others, but a designated period of time to engage in a specific activity selected by the purchaser. ~~The "List of Spending Alternatives" included in this report gives many suggestions.~~ It should be noted that the suggested activities did not evolve exclusively from the teacher. Children were consulted as to how they would like to spend their free time (frequently with amusing results.) The class usually decides how much a free-time period shall cost. Lincoln experience has shown that a ten minute period is sufficient for most children, however, a free time period may be more arbitrary, that is, one hand of "Old Maid" or one game of checkers.

A child should be permitted to buy free time whenever he wishes. The cliche, "You may do that after you finish your work", must be avoided. We must show children that we respect their ability to make decisions regarding their use of school time.

We control their unwise decisions by rewarding them only when they are demonstrating appropriate social and academic behaviors. A child, in order to "spend", must have already earned.

It becomes the responsibility of the classroom teacher to provide activities for free time, some that can be accomplished independently and some in a group. Of course, the child who wishes to engage in a game of checkers, for example, during his free time must have a partner. If no one else wishes to play, that is, buy free time, the child must be directed to a solitary activity or, wait until someone will play with him. Not all free time must be spent in the child's room. He can be given the opportunity of engaging in an activity in someone else's room as long as it has been carefully pre-arranged with the others involved.

An important consideration is that many classrooms provide few alternatives for which a child may spend his points. This is due partially to unimaginative teachers but most likely an administrator with a traditional philosophy of education, which looks upon free-time activities as inappropriate or wasteful of student and teacher time. Such administrators should be challanged to suggest motivational alternatives. These comments may seem to be unrealistic but what must be understood is that the "Lincoln School Economy System" is a method of classroom management that, while not pretending to be unique in discussions of behavior modification, is a highly

organized, rationally conceived and applied device that has proved to be effective in enhancing children's self-control and increasing academic output. If a teacher throughly studies its suggestions, she can answer the challenges presented by traditional administrators.

3. Building activities - any activity involving teachers and students from various classrooms brought together in order to share a legitimate educational experience.

Each Friday afternoon at Lincoln, children from each classroom spend points to visit interest centers throughout the building. Typically, one o'clock to two, primary aged children will participate; from two to three, the intermediates are involved. ~~The "List of Spending Alternatives" gives numerous suggestions.~~

Building activities serve many purposes. They provide more alternatives for teachers to permit children to spend points, alternatives not easily available within the immediate classroom. They bring the entire school population together, fostering social interaction and allow teachers contact with more children. Most importantly, they give children reasons for accumulating points and something to say about how they will spend them.

Building activities usually take forty-five minutes to an hour. They are not considered privileges, nor purchased as one would "free-time". If a child decides

to participate, he must spend considerably more points than he would for free time. Usually, Friday activities cost from 200 to 400 points. It is impossible for a child to earn the points necessary to participate in one or even two days. But, if he had worked appropriately during the preceding week, he should have earned more than enough to take part. If a child does not earn sufficient points for participation, or if he has but does not care to spend them, he may visit a work room where he can continue the work for which he has contracted. Many children become frugal with their points and hoard them, waiting to spend them on something they find more desirable. By creating spending alternatives that require both short and long term saving, the classroom teacher is acquainting children with concepts of budgeting and thrift.

It should be noted here that no child is being deprived of participation in any activity deemed by the Lincoln staff to be appropriate for him. Building activities are legitimate classroom happenings that children find especially exciting and ask to do frequently. The only exception to this at Lincoln is the school bus which is at our disposal which permits us to expand our physical education program so that community recreational services may be utilized, eg, roller skating, bowling, ice skating and swimming.

All building activities are structured so that no inequity in group size or

children's desires occurs. For example, roller skating is a popular activity. On a given day seventy-five children may wish to participate. To accomodate this problem, each room is given a quota, say five per room. Children list three choices, in order of preference, from the list of activities available on that particular Friday. A teacher reviews their choices and assigns them to an activity using the quota system. A list is kept of the participants and the activity repeated on subsequent Fridays until everyone who wishes to do so may take part.

Success of this program results from teacher communication and organization. Experience has taught us that children must be asked Friday morning what they wish to take part in Friday afternoon. To do so earlier in the week results in confusion on Friday, as many will forget their choices, change their mind or not have the points needed to participate. Initially some children will not care to become involved with children outside their classroom, or will select an activity because a friend from another room will be there. Using the quota system and making the selections the same day eliminates these problems.

Our experience at Lincoln with Friday activities has shown that less than ten per cent of the children fail to participate. This illustrates the positive motivational features of the system.

The Cost Response

An important feature of the economy system is spending points for objectionable behavior. A "cost-response" is a privilege granted a teacher as the natural figure of authority in the classroom. Why natural? Because she is being paid to organize the child's day, care for him, help him with his work, see that he is fed, play with him and send him home safely. After the class has established rules for self-government, the teacher assumes the role of recorder of behavior. When a child "spends" points for violating a class rule the teacher indicates his violation and collects his points. She must never assess someone for an objectionable behavior, only collect what he has decided to spend. She must never attempt to collect for an objectionable behavior the class has not deemed such. It requires careful planning to construct rules to govern all possible misbehaviors, but it can be done successfully and realistically.

When the teacher invokes a cost response, she may immediately be accused of "taking points away." Not so! She must explain that the class has imposed the rule and that she is only exercising her mandate to collect the points. The decision for her to do so has been made by the offender. If the latter does not protest, he may be given a small number of points for admitting his mistake and trying to improve. In this respect the teacher is a neutral figure, calling to awareness

the rules the class has devised. (Just as the police officer arrests the speeder who decided to drive faster than the law permits, the offender may have assisted in passing the law by electing its author. He may also receive a lighter sentence if he admits his error and apologizes for his behavior.)

The teacher, it appears, must be a master of manipulation. Not so! She must become a member of her class, coordinate its activities, freely discuss its problems, participate in its functioning, arbitrate its disputes and encourage its members to assist in creating its structure. Her children must learn that they are capable of self-government and decision-making. What transpires in their classroom is their business and an outsider will be brought in to settle disputes only if their efforts have failed. In this atmosphere the cost-response is treated as a logical outcome of self-discipline because it has been invoked for them, by one who shares their determination for self-improvement. In an environment where morality is cultivated, the need for coercion diminishes. <u>The teacher does not give points, children earn them</u>! <u>The teacher does not take points away, the children spend them</u>!

The teacher must make constant reference to rule by the people. The class has determined what rules will govern them. It can be expected that not everyone will

agree to all rules, but if the majority is to prevail, civil disobedience must be directed toward appropriately changing the will of the group, not disturbing its functioning. Children must experience the operations of a democracy.

The use of the "cost-response" is the most delicate aspect of this social exchange program, for it is a very definitive way of recording behaviors that have previously been identified as objectionable. Most inappropriate behaviors are those which impede group functioning. Children frequently s ee behavior as disagreeable only if it is punitive or visibly upsetting to another. They fail to recognize the subtleties of behavior that may be looked upon unfavorably. The boy who sits at his desk, vocalizing the task at hand, may be distracting to a classmate seated near him, though his intentions are contrary. Should the teacher invoke a cost-response when the offender is unaware of his offense? The girl who shouts profanities when provoked by another but seldom initiates conflict; shall she be "charged" for obscenity? It is not an easy role the teacher assumes in managing her responsibilities!

Fortunately, most objectionable behavior will be volitional and amenable, without excessive debate, to cost-responses. Some misdeeds, however, will present unusual circumstances and require more careful examination. A teacher may be guided by

considering whether invoking the cost-response will call attention to the behavior and assist in extinguishing it, or will it only call attention to the child who has committed the offense. In a system where self-improvement is a goal for everyone involved, the teacher must anticipate behavioral problems and be prepared to use their occurrence as a basis for exploring with a child more acceptable ways of ameliorating his frustration. The cost-response provides an objective method for concentrating on the child's behavior, which is intellectual and avoids attacking the child, which is emotional.

When a cost-response is invoked it must be done in a highly individual manner. The teacher should not announce to the class that, "Johnny has just spent twenty-five points for fighting!" She should communicate quietly and directly to him. The peer group is well aware of his behavior and the necessary expenditure of points. To inform everyone may elicit defensive reactions from the offender, further cost-responses and eventual chaos.

The teacher must call attention to the objectionable behavior immediately and, if necessary, discuss it with the child involved. Some system of recording points at the time of infraction must be devised. Lincoln teachers find hash marks on clipboards to be satisfactory. Points may be recorded on adhesive tape strips which teachers place on their wrists.

Consistency is the key to success in using the cost-response. The teacher who becomes emotionally involved when presented with the need for invoking a cost response is likely to experience failure. Some teachers feel that the child will look upon them unfavorably when they collect his points. Such a teacher may ignore the initial infraction, then call it to his attention only when it gets out of hand. Children do not understand this behavior. They cannot tolerate the uncertainty. Hostility that is directed toward the teacher will occur in direct proportion to the inconsistent behavioral structure she provides. The teacher who personalizes her mandate is performing in a manner inconsistent with the will of the majority. She has not imposed the rules, the group has. She fails because she has not adequately interpreted the feelings of the majority to the individuals comprising it.

Obviously, each classroom teacher demonstrates different levels of tolerance for such phenomena as noise and movement. Some prefer a more controlled, sedate environment, whereas others permit much physical activity and open conversation. Learning is possible in either, for it occurs within the structure provided by the teacher and should not be judged solely by the activity level visually or auditorially apparent. The most difficult task facing the teacher at the onset of the school year is establishing a functional climate for her classroom. It is easy for a child to exceed the teacher's idea of limits of behavioral propriety if these limits have

not been set or discussed openly with everyone involved. Once appropriate behavioral boundaries have been established democratically, the cost-response is used to illustrate them and to inhibit those who exceed them. It is probably advantageous that all teachers do not have identical behavioral expectations, as long as they remain realistic and consistent. Children must learn that everyone they meet in their life may not treat them similarly; expectancy may vary and social adjustment become necessary.

When, on occasion, a child has spent all the points he has earned because of objectionable behavior necessitating the use of the cost-response, he should be placed in an isolation environment and given seat-work he can perform independently. On the completion of this work he is free to return to the normal activity of his class. This assignment is not awarded points but only used as a readmission ticket. Typically, it would consist of seatwork that can be successfully performed independently in about five minutes. When the child returns to the classroom activity he resumes earning for work he completes. At Lincoln, children are placed in an isolation room, away from the distraction of their classroom. This practice has proven quite satisfactory, but some teachers prefer an isolation cubicle within the classroom.

The isolation principle is frequently abused in many behavior modification programs because it becomes a technique of punishment. A child is directed to a room

where he must sit alone, with little to occupy his time but hostile thoughts. By having him "work his way" back to his room the emphasis is placed on productivity. The class wants him back but only to perform, not disrupt. He is also aware of how long his isolation will last, that is, the completion of the work at hand, not until the teacher comes for him. He is able to control the duration of isolation by deciding when to complete his task, remembering that he cannot earn points while in isolation.

SOME THOUGHTS ABOUT AUTHORITARIANISM

The classroom teacher is entrusted with an amazing degree of authority. Perhaps no other public employee is given more. Within the school, the teacher decides what a child is to learn, when he is ready to do so, and how he shall go about it. She may decide where he shall sit and when he has the right to talk, play, eat and toilet himself. The teacher is given the authority to control noise, force labor, punish misbehavior, criticize failure and reward success. She can make value judgements and decisions for children and has the authority to discuss priviliged information regarding them with others. All of this power is given the teacher for the "improvement of the child."

In addition to authority granted the teacher by right of position, some authority is forced on her by others. Parents give the teacher authority to protect their children, care for them in matters of health and accident, and demand behaviors in keeping with the expectations of their family.

The Board of Education, through the school administrator, expects teachers to wield whatever authority they need to make sure that children obey the system. On a more global scale, society demands that educators assert more authority in quelling student riots and attacking the problem of drugs.

Interestingly, not all authority might be so readily assumed by the teacher if

she considered its ramifications. However, she doesn't bother to, because teaching failure is traditionally associated with not being able to assert one's authority, which is illustrated by poor classroom control.

> Willower found that, "Teachers tend to take a custodial rather than a humanistic approach to pupil control. "Old Guard" teachers tend to equate good teaching with good discipline and to impose this concept on neophytes."[1]

The results are teachers who demand more authority and seldom consider the exorbitant amount of what they already have. They desire administrators who support them without compromise. They unknowingly but willingly become authoritarian personalities!

Society is quick to place blame for its moral and spiritual decay on the institutions responsible for the education of its youth. The "permissive" home is accused of failing to provide appropriate rules or princples of conduct. Schools are similarly maligned for giving in to the demands of the student minorities, wasting taxpayers money on innovative curriculum and failing to preach the virtues of the middle class conservative ethic. Emerging teacher militancy is interpreted as a drift from the traditional altruism which has made our educational system superior to others. The authoritarian culture promotes authoritarianism; teachers accept the challenge readily. According to this tradition children should be

1. Lonald J. Willower, "The Teacher Subculture", ERIC microfiche ED-020-588

"told what to do" by adults. They must be subservient to those with more education and the mystique of experience. Respect for authority means obedience. The teacher who wields authority well may find her job less complex and as a concommitant, much easier, and personal satisfaction becomes a natural consequence of proving to one's peers that classroom control has been established and maintained.

Boyd R. McCandless, in his book Children Behavior and Levelopment, speaks of the authoritarian personality.....

> "rigid or inflexible; that it is concrete in its thinking and does not handle abstractions easily; that it is conforming, being conventional, for example, in its morality and its politics; that it does not willingly or accurately examine its own thoughts and its own adjustment; that it manifests an exaggerated respect for authority, including "overprotestations" of love for parents. These protestations, however, are combined with underlying hostility toward parental or other authority figures. The authoritarian personality places extreme emphasis on masculinity or femininity, and is hostile (prejudiced) toward groups other than the one to which its owner belongs. It prefers absolutes; black is black and white is white; there are no grays - in other words it is intolerant of ambiguity. It suspects evil in others."[2]

Most schools, as a matter of expediency, reflect the authoritarianism of the society in which they exist. The culture that suggests, as a solution to preserving law and order, hiring more police, will also require stronger measures of discipline within the school. The burden of compulsory attendance has forced the school official to coerce the student population into accepting the system

2. McCandless, Boyd R., Children Behavior and Levelopment, 1967, Holt, Rinehart and Winston Inc., New York, N.Y. p.481

as it exists. Educators must ignore the pluralistic nature of our society, because to acknowledge its existence and to restructure their offerings to meet its demands are expensive and contrary to the American heritage. Force becomes the primary method of control and it is assumed, will expedite learning. Both the educational system and the teachers involved are trapped by the more global problem of society, that is, freedom!

Being granted authority is not tantamount to being authoritarian. If a classroom teacher interprets her authority as a mandate of leadership granted by the people of a democratic system, she will be able to assume the authoritative role without ignoring principles of egalitarianism. Democracy is based on ideals of equality. It selects a leader to serve its people. The teacher, though not elected, assumes the role of authority by nature of her expertise. Children do not question her role as leader, only her inability to serve them or meet their immediate needs. They interpret her actions as oppressive if they feel they are imposed without considering their feelings or the feelings of others. They object to her commands when the commandment disturbs their serenity or interrupts their complacency. They want something to say about what they should learn and when and how they should learn it; after all, it is their life. Children love to make decisions when faced with appropriate alternatives, for it is in this way they learn that their opinions

and values are important, and in this way the teacher can prove that she is interested in them as individuals. Democracy must be illustrated, not preached, for it is egalitarian, not authoritarian.

Children should not be controlled by teachers. Teachers should construct a classroom where children learn to control themselves. If a child, in a non-authoritarian system, is given opportunity to set up rules to direct his class then his understanding of the rules should enhance his behavior. The directives come from within the child and are not imposed by the authoritarian source. The child is not being told what to do, but only to respect the rules he has set to guide himself. If he violates these principles then he is not maintaining the contract he made with the teacher and the class. Hopefully, peer group pressure will illustrate this violation and do much to inhibit the objectionable behavior.

Most disruptive behavior results from a child's inability to meet the immediate demands created by the environment. Frustration is expressed in a variety of ways, some less sophisticated than others. Most teachers quickly react to the symptoms of the frustration and attempt to curb their objectionable manifestations. This is <u>control</u> and does little to help a child understand his discouragement. Some teachers will prevent the child's exposure to situations he cannot cope with or will tell him how to perform. This is purely avoidance technique and quite

unrealistic since no one will follow the child the remaining years of his life protecting him or making his decisions. Some teachers understand that if a child is to learn how to find acceptable ways of expressing his frustrations, he must be placed in an educational environment where these problems may occur and then, if they do, and his reactions to them are unacceptable to the group, the teacher must be able to consider, with the child, alternatives, that is, acceptable behaviors. In this way the child will learn restraint or will avoid those situations which frustrate. As he matures in this educational climate he will, at his developmental level, overcome unsatisfactory expressions of frustration. For example, profanity is condemned by most teachers, though realistically it is a more sophisticated expression of anger than physically abusing an antagonist. The teacher neither ignores nor tolerates this behavior, but simply discusses with the child more suitable ways of expressing his displeasure and applauds the positive fact that he did not strike his adversary. Only in the non-authoritarian school is the child free to experience concrete life situations which he can resolve and internalize because of personal involvement. The unsatisfactory alternative is generalization from vicarious experiences of others.

ED 078632

# Studies of Contextual Analysis and Concept Learning of Normal and Retarded Children

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The purpose of this paper is to summarize research findings relative to context analysis and concept learning, completed last year at the University of Georgia. Each of these sets of studies investigated the influence of certain variables on learning.

## Context Analysis

Context analysis means the determination of the meaning of unknown words by using clues contained in the sentence or paragraph (context). There were 4 studies dealing with context clues. The rationale for these studies centers around eight key points derived from a review of relevant literature. They are:

1. No matter how various authors classify the types of context clues, the classification schema includes direct (e.g., synonyms) and indirect clues (e.g., similes);

2. Only a few studies have explored the differential effectiveness of different types of clues or the differential effectiveness of various values of the same type of clue;

3. Enhancing the saliency of context clues (e.g., by italics) facilitates their use and the learning of the meaning of the unknown word or words;

4. a. Practice in the form of oral or written recitation improves the learning of words from context;

   b. Written recitation is superior to oral recitation;

5. Research concerning expository teaching vs. individual discovery has failed to reveal either as consistently superior;

6. Non-mentally retarded children are usually superior to the mentally retarded in the use of context clues;

7. Good readers are usually superior to poor readers in the use of context clues;

8. Older children are usually superior to younger children.

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Paper delivered at the 51st Annual Convention of the Council for Exceptional Children held at Dallas, Texas, April 22-27, 1973.

Deriving from these points, the four studies and the variable investigated were as follows:

Study A: Direct clues (synonyms) vs. indirect clues (similes) (Allen, 1973)

Study B: Statement of meanings (explicitness) vs. no statement of meanings (discovery) (Hosford, 1973)

Study C: Written recitation for 1 trial vs. written recitation for 4 trials (Bracewell, 1973)

Study D: New words and their synonyms underlined for 1 trial vs. underlined for 4 trials (2 degrees of clue isolation) (May, 1973a)

The tested instructional objective for each study was: Given new words in the context of paragraph-length prose selections, the student can identify their meanings from context and recognize those meanings out of context with 90% accuracy.

Procedures

All studies used a 4 x 3 x 2 design: 4 trials, 3 subject groups, 2 treatments. The subject groups were discussed earlier by Dr. Blake. The task material for all studies was similar. In each study paralogs were the unknown words. A study-test procedure was used for studies A, B, and D, while a study-recitation-test procedure was used for study C. The same paralogs were studied and tested on each trial but the orders of presentation differed on each of the four trials.

The variables were manipulated in the study or recitation lists. In Study A, a direct clue item (synonym) would read "I like your new dress. It is ingast, very pretty ...;" an indirect clue (simile) item would read, "I like your new dress. It is as ingast as your new coat ..." In Study B, explicitness of clue was achieved by giving the meaning of the new word following each of the 10 short paragraphs. The "discovery" condition used the same paragraphs but omitted the meaning of the new word following the paragraph. Study C required the subjects to write the meaning of the new words: one treatment on the first trial only, the other treatment on each of the four trials. Study D, of course, used underlining to isolate the new words and their synonyms: one treatment for the first trial only, the other treatment for each of the four trials.

The test lists were all similar in that the synonyms plus five foils were listed at the top of the page while the paralogs were listed at the bottom. The subject wrote the synonym next to the paralog.

Results

Results are summarized in Table 1.

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Table 1 about here

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In each study, the main effects of groups and trials and the Groups by Trials interaction were significant. This is interpreted to mean that under all conditions the normal CA matched group exceeded the other two groups. There was no difference between the MA matched and MR groups. All subject groups learned and improved across trials but the CA group learned more and learned faster.

Other results showed that synonyms (Study A) were more effective than similes for each group and for the groups combined. Study D found that underlining for four trials was more effective for the younger normal group whereas underlining for one trial was more effective for the retarded.

In terms of the instructional objective, no group under any of the eight conditions attained the criterion of 90% accuracy.

These studies can be viewed as first approximations to the teaching of context analysis.

## Concept Learning

A concept is a class of stimuli which have common characteristics. The learning of concepts then involves the acquisition of the concept name or grouping criterion and its correct application to members of the category (positive instances) and its non-application to non-members of the category (negative instances).

The rationale for these studies include the following:

1. Learning to read involves the learning of new concepts or the learning of new names for concepts.

2. Evidence of the influence of task and treatment variables across ability groups has been scarce.

3. The process involved in learning concepts requires at least three steps:

   a. discriminating relevant from irrelevant attributes for a given concept;

   b. discriminating between the relevant attributes of one concept and those of another; and

   c. the generalization of discriminated attributes.

4. Among others, two of the variables which influence the learning of a concept are the ratio of positive to negative instances of that concept to which the S is exposed and the method of presentation of the instances of that concept (successive vs. simultaneous exposure).

5. Research with normals usually shows that the higher the ratio of positive to negative instances, the more efficient is the learning of the concept.

6. Simultaneous exposure should be more efficient than successive because of the reduction in memory load.

Deriving from these points, three studies were conducted as follows:

Study E: Efficiency of learning three concepts which differed in the ratio of relevant to irrelevant attributes (1:1, 3:1, and 5:2) (May. 1973b)

Study F: Effect of two ratios of positive to negative instances (3:1 and 1:3) (Hurley, 1973)

Study G: Effect of simultaneous vs. successive presentation. (Schelly, 1973)

The instructional objective for each study was: Given a set of concept labels out of context, the student can recognize specific instances on a multiple-choice test with 90% accuracy.

Procedures

Study E used a 3 x 3 design: 3 ability groups and three ratios of relevant to irrelevant dimensions. Studies F and G used a 4 x 3 x 2 design: 4 trials, 3 subject groups, 2 treatments.

The concepts used in the three studies were the same. As in the context analysis studies, these concepts were paralogs. In addition to the ratios of relevant and irrelevant attributes, each concept was presented a total of 20 times, either successively (only one item on a page) or simultaneously (all items on one page). Thus in Study E's task 15 positive to 5 negative instances of each concept was presented

successively in unmixed contiguity. In Study F, the concept instances were presented successively: 15 positive and 5 negative for 1 treatment; 15 negative and 5 positive instances for the other treatment. In Study G, all concepts were presented using 15 positive and 5 negative instances in either a successive or simultaneous presentation.

All studies used a study-practice-test procedure. The study list gave the concepts and their defintion with six examples. The practice lists contained multiple choice questions with the choices being the three concepts and "none of these." Subjects were given 5 seconds to complete each item before being told the correct answer and moving on to the next item. The test lists were similar to the practice lists except that the correct answers were not supplied. The variables of interest were manipulated in the practice sets.

Results

Results of the analyses of variance are summarized in Table 1.

Study E. The retarded were more variable than either of the other groups and were inferior in mean performance (M=7.36 for the retarded, 8.16 for MA, and 8.38 for CA) to each of the normal groups, but the younger and older normal groups did not differ on means. Additional analyses revealed that the concept with the 1:1 ratio was easier to learn than those with 3:1 or 5:2 ratios, but 3:1 and 5:2 ratios did not differ (means = 8.49 for 1:1, 7.82 for 3:1, and 7.58 for 5:2).

Study F. Statistical analysis showed significant main effects of groups, treatment, and trials. The older normal children were superior to both the younger normal and retarded groups; the latter two did not differ. The 3:1 ratio of positive to negative instances was superior to the 1:3 ratio. All groups improved over trials.

Study G. The older normals exceeded both of the other groups which did not differ. The groups did respond differentially to the treatments over trials. The older normals showed similar rates and amounts of learning with the two treatments. For the younger normals and retarded those receiving a successive exposure showed a faster rate of learning than those receiving a simultaneous exposure.

The instructional objective was attained by the older and younger normals with the concepts having the 1:1 and 3:1 ratio of relevant to irrelevant dimensions (Study E); by the older normals with the 3:1 ratio

of positive to negative instances (Study F); by the older normals with successive presentation (Study G).

## Discussion

Generally speaking, the results of these studies support the results reported in the literature. The failure to obtain significant interactions can be interpreted to mean that the influences of the variables studied are the same with the retarded as they are with normal children. There were a couple of peculiar exceptions, however. Why underlining for only one trial proved more beneficial than underlining for 4 trials for the retarded is unclear. Perhaps, the explanation may be in the distractibility quotient of our sample or in what Johnson and Myklebust (1967) term cognitive overload or it may simply be an experimental artifact. It is also interesting to note that manner of presentation did not make a difference to older normals but it did to younger normals and the retarded. Does this mean that the older normals had learned how to learn or developed a cognitive style for responding to school-type tasks? These certainly are problems for future research.

Overall, the retarded performed in a manner similar to their mental-age mates rather than similar to their chronological age mates. This provides some support for the notion of using the MA as a basis for classroom planning (Goldstein and Seigle, no date).

Throughout all of the studies, the question of memory load is raised. The failure of the MR group to achieve the instructional objectives may indicate that the amount of practice was insufficient for the complex concepts being learned or that three complex concepts in mixed contiguity is too difficult a task.

Some of these questions are currently being investigated by us. The studies reported on today are seen as first approximations. The variables will continue to be manipulated until the MR can achieve the instructional objectives set.

In summary, this paper has reviewed two sets of studies: One set dealing with the learning of concepts in context, the other with the learning of concepts out of context. The general results have been presented and some questions raised. These studies are currently being followed up. Studies of context analysis are investigating the effects of training in identifying form classes and in recognizing types of

relationships; the influence of paradigmatic vs. syntagmatic responses; and explicitness of clue. Concept learning studies are investigating different ratios of positive to negative instances, degree of contiguity, number of concepts to be learned, amount of redundancy, amount of variety, simultaneous vs. successive presentations, ratio of relevant to irrelevant attributes, induction and deduction, number of rules and amount of practice.

Table 1

Summary of Results of Studies of Contextual Analysis and Concept Learning

| | Studies* | | | | | | |
|---|---|---|---|---|---|---|---|
| | Context | | | Concept | | | |
| Source | A | B | C | D | E | F | G |
| Between | | | | | | | |
| Groups (G) | S | S | S | S | S | S | S |
| Treatments (T) | S | NS | NS | NS | ** | S | S |
| G x T | NS | NS | NS | S | ** | NS | NS |
| Within | | | | | | | |
| Trials (TL) | S | S | S | S | S | S | S |
| G x TL | S | S | S | S | NS | NS | NS |
| T x TL | NS | NS | S | NS | ** | NS | S |
| G x T x TL | NS | NS | NS | S | ** | NS | S |

* A - Synonyms vs. Similes

B - Statement vs. No Statement of Meaning

C - Written Recitation: One Trial vs. Four Trails

D - Clue Isolation: One Trial vs. Four Trials

E - Ratio of Relevant to Irrelevant Attributes: 1:1, 3:1, 5:2

F - Ratio of Positive to Negative Instances: 3:1, 1:3

G - Simultaneous vs. Successive Presentation

**Not Applicable

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ED 078632

# LEARNING ECONOMY: A TOKEN REINFORCEMENT SYSTEM DESIGNED FOR THE SPECIAL EDUCATION CLASSROOM[1,2]

by

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[1] Paper presented at the 51st Annual Convention of the Council for Exceptional Children, Dallas, April, 1973.

[2] This investigation was partially supported by Title III, ESEA Mini-Grant MG-26-72-1000-Z, awarded to Gary A. Livingston, Topeka Public Schools.

# INTRODUCTION

The topic of this presentation is the establishment of a Learning Economy in an E.M.R. classroom and the resulting study of its implementation. The Learning Economy was developed as an alternative approach for teaching financial management.

The need for such an alternative program became apparent after my first year of teaching, when I realized my failure in trying to make money concepts and skills meaningful using many of the traditional methods. From the beginning I have felt that money management was an indispensable curriculum area for special education students. If these special students are ever to become self-sufficient or independent in our complex, money-oriented society, they must have an understanding of and a competency in the area of personal finance. In support of this hypothesis, research, such as Edgerton, 1967, has repeatedly cited uncontrolled spending, inadequate budgeting, and record keeping as major problems which confront special education graduates.

Rather than presenting money management as just another isolated curricular experience, I decided, as an alternative, to create a token-reinforcement system within the classroom which would be built upon the ongoing curriculum. Tokens, such as points or discs, have proven effective in the special education classroom. However, their use rests on the assumption that these students will be able to make this token-to-dollar transition upon completion of their schooling. In actuality, the tokens often bear little resemblence to our society's monetary system, either in denomination or in exchange value. It was felt that a more realistic and direct approach was necessary to provide meaningful financial experiences for these special students.

The Learning Economy was implemented during structured activities, such as spelling, reading, and math, and these occurred during the first periods of each day. Each student worked individually at his desk on tasks which the teacher considered appropriate to his particular level of ability. Standard developmental materials were employed. During the structured activities the teacher and aides walked around the room and offered assistance to the students upon request. All assignments were corrected by the teacher upon completion and returned to the students for correction.

The purpose for using only structured tasks was to obtain relative consistency in student performance and an objective basis for payment.

Procedure

Developed around the ongoing classroom program, the Learning Economy was introduced by distributing Work Records to all students in the program. The subjects were instructed that the records were for their use and entries were to be made by them concerning their percent of performance on the assigned task and the money exchange value for that percent. A portion of this record is presented in Figure 1.

---

Insert Figure 1 about here

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Upon completion of an assignment and after this assignment was checked by the teacher, each subject converted his raw score (number correct and number possible) into a percentage value. A conversion table for computing percentage grade was provided for the student's use. This percent was entered into the Work Record with regard to the area of instruction and the day on which it was accomplished. This value was then converted into a money value as specified in Figure 2. Daily records were kept by each student for every

assigned task.

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Insert Figure 2 about here

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On the final day of the school week (Activity Day), students were instructed to total the amount of earnings for that week. Upon completing this, each student individually brought his Work Record to the teacher for checking. After this check, the student paid himself from a cash register provided for this purpose. The money used was Ideal Toy Money consisting of both paper coins and paper bills of the same approximate size, color, and denomination of United States currency.

After all students received their earnings, each was provided with the option of either working on the regularly assigned task for that period (e.g. reading) or buying privileged activities (e.g. listening to stories on tape or playing educational reading games). An attempt was made to provide pay off activities which were not only interesting to the students, but also educationally relevant to the curriculum of the class. The following is a list of these optional pay off activities:

Reading: listening to high interest stories

Milton Bradley's Phonetic Quizmo

story tapes and various teacher-constructed language games

Math: Milton Bradley's Math Quizmo games (addition, subtraction, multiplication, division, and telling time)

Math baseball

also many teacher-constructed games using math problems

Free Activity Period: during this time the students might engage in any game or activity of their choosing (e.g. watch T.V., play chess, checkers, or cards, listen to records) or various other leisure time activities.

It was, therefore, the goal of this project to simulate a working environment within the classroom that would incorporate the following student experiences:

(1) earning money for work production (i.e. for academic achievement)

(2) handling money in making change, computing wages, buying and selling, and

(3) setting money priorities in spending and saving.

Organizing the classroom as a simulated job experience with students being paid token money for their academic achievement seemed a more realistic way for students to obtain skills in financial management. In brief, it seemed that the more the classroom could relate to realistic living and working conditions, the better the chance these students would have for adjusting and becoming independent workers and consumers in this society.

## METHOD

### Subjects and Setting

The setting for this study was a special education classroom integrated within a junior high school in Topeka, Kansas. The subjects participating in this study were thirteen students enrolled in a Level III special education class for the mentally handicapped. They ranged in age from 12 to 17 years, with I.Q.'s ranging from 50 to 75 as determined by their placement in this special class. The class consisted of students with varying socio-economic backgrounds. Instructional personnel consisted of a full-time certified special education teacher, a half-time teacher aide and a volunteer student aide for one period a day three days a week.

Instructional activities were provided for the students during five fifty-minute periods each day. These activities were divided into two classifications, according to their method of presentation: unstructured or structured.

Those students who chose not to purchase these optional activities during the day, were paid for doing their regular class work, according to the prescribed pay scale.

In addition, the students were provided with the option of saving for extended pay offs after nine and eighteen weeks of the program. The nine-week pay off activities included purchasing materials necessary for many of the arts and craft projects included in most special class curriculums (i.e. making candles, leather, ceramics and wood projects). Also provided for purchase were many of the supplies needed for their daily school work, such as pencils and paper.

Along with nine-week pay offs, a full day field trip could be purchased at eighteen-week intervals. Field trips to the zoo, bowling alley and skating rink were provided as extended pay offs.

## Evaluation

Evaluation of the Learning Economy focused not only upon the objectives specified for money management, but also upon the quality and quantity of the class work produced by the students. Three specific questions were to be answered:

1) Were the objectives, pertaining to money values and exchange, attained upon completion of the project,

2) Was the token reinforcement system effective in producing increased learning performance, and

3) Were the students interested in the program and willing to do extra work to take part in it.

Prior to the initiation of the Learning Economy, specific learning objectives were specified regarding the type of token system which would yield maximum learning for the students. It was observed that many of the students had difficulty performing money exchange tasks, for example, making change, money conversion, savings. To establish a system which would be relevant to the students, it was an objective of the system to train these tasks. To evaluate attainment of this objective, a competency-based instrument was devised, consisting of 51 items, and administered to the class. It was re-administered upon completion of the project. Figure 3 illustrates the pre- and post- evaluation percentages of each student, along with his gain scores.

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Insert Figure 3 about here

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From these results it appears that there was an inverse relationship obtained between pre-evaluation and gain scores. This in part can be explained by a ceiling effect which occurred in some areas of the evaluation instrument.

It was not the intent of this study to draw a close relationship between the token system and these gain scores because of the research design employed. However, these results give evidence to the higher level of competency achieved in functional mathematics using a practical application approach to money management.

Data were also collected on the reading performance of the students throughout this project. The criterion of reading performance selected was the average daily reading comprehension scores of the class. The questions contained at the end of each story on the reading materials assigned to the students were utilized. An A-B-A-B reversal design was employed for analysis. These results are presented in Figure 4. These data are to be interpreted as daily class averages on reading comprehension tasks.

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Insert Figure 4 about here

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As can be observed, the Baseline I performance of the class was variable, ranging from 56 percent to 82 percent with an average of 69. Upon instituting the token system, an increase in the average reading performance of the class was observed. An average daily increase of 12 percent for each class student resulted.

To further examine the relationship between the token reinforcement system and the reading performance of the class, the system was discontinued. The level of baseline performance was re-established.

Finally, the token system was re-introduced into the classroom structure, and a replication of the previous results was observed.

Thus, it can be concluded that the token system did reinforce classroom reading performance and produce favorable changes in reading comprehension.

A final means of evaluating this study was that of determining whether the students in the class were interested in taking part in the token system. To measure this, data were collected on two variables, attendance patterns of the students, and frequency of student initiated make-up work. It was assumed that if the students both came to school more often and elected to make-up assignments when absent during the sessions when the token system was in effect, they were, in fact, interested in the system and willing to expend increased

effort to take part in it. An A-B-A-B reversal design was employed to analyze these data.

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Insert Figure 5 about here
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Figure 5 presents the attendance pattern of the class throughout the study. As indicated by these data, the students did, in fact, attend school more when the token system was in effect. In addition, as presented in Figure 6, when they were absent from school they generally made up the assignments missed on their own time and without the expressed directions to do so by the teacher.

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Insert Figure 6 about here
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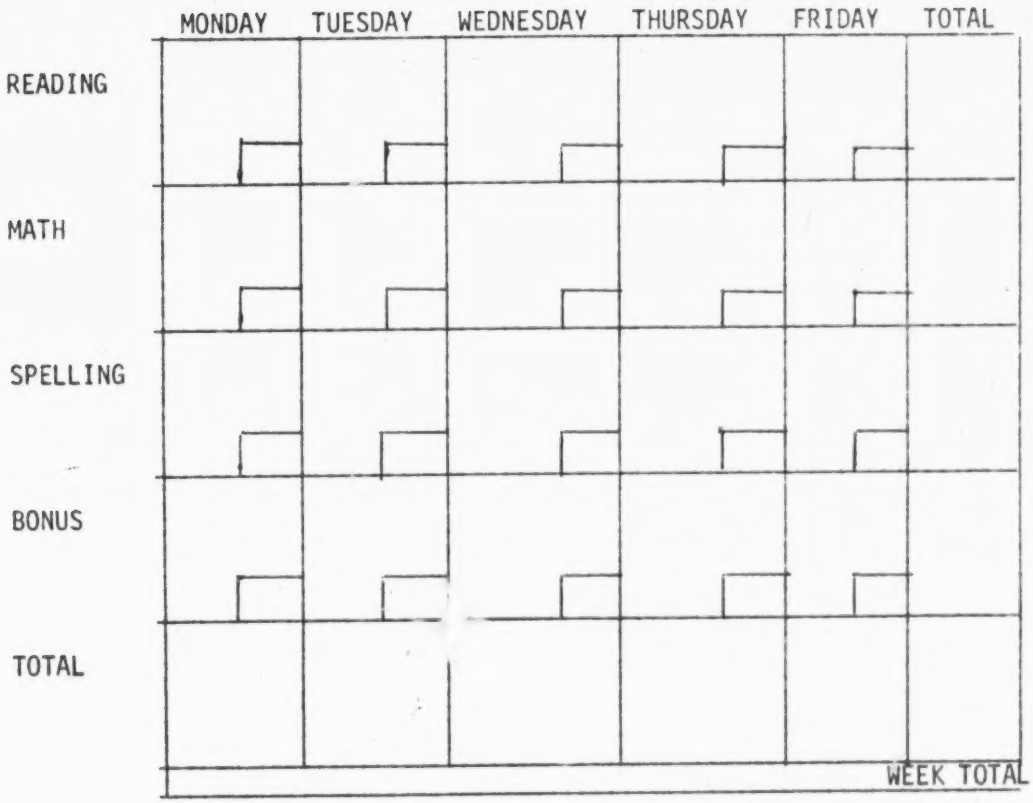
Two conclusions can be drawn from this study. First, token systems can be utilized as a relevant learning experience in and of itself by being structured about the ongoing curriculum of the class. In building a token system, specific learning objectives can be established and attained.

In addition, this study lends further evidence to the powerful reinforcing effects which can be obtained by instituting a token system. Not only was an increase in the quality of pupil performance demonstrated, but also an increase in quantity by motivating the students to attend school on a more regular basis and make-up the work missed when absences occurred.

Figure 1

A PORTION OF WORK RECORD




(NAME)

(MONDAYS DATE)

Figure 2

Conversion chart to determine money value

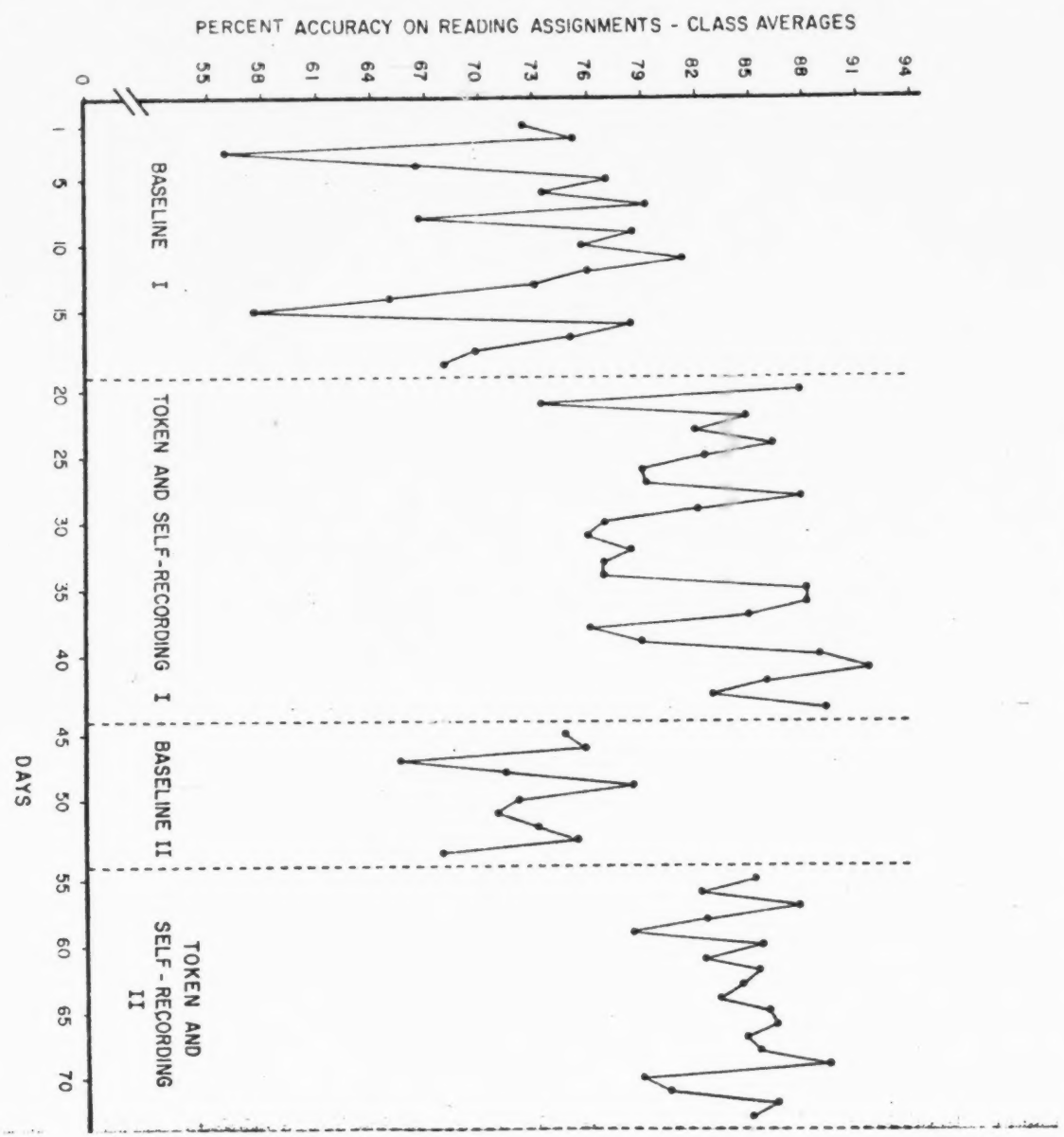
| Per cent Accuracy | Money Value |
|---|---|
| 100-90 | 25¢ |
| 89-80 | 20¢ |
| 79-65 | 15¢ |
| 64-50 | 10¢ |
| 49-40 | 5¢ |
| 39-30 | 2¢ |

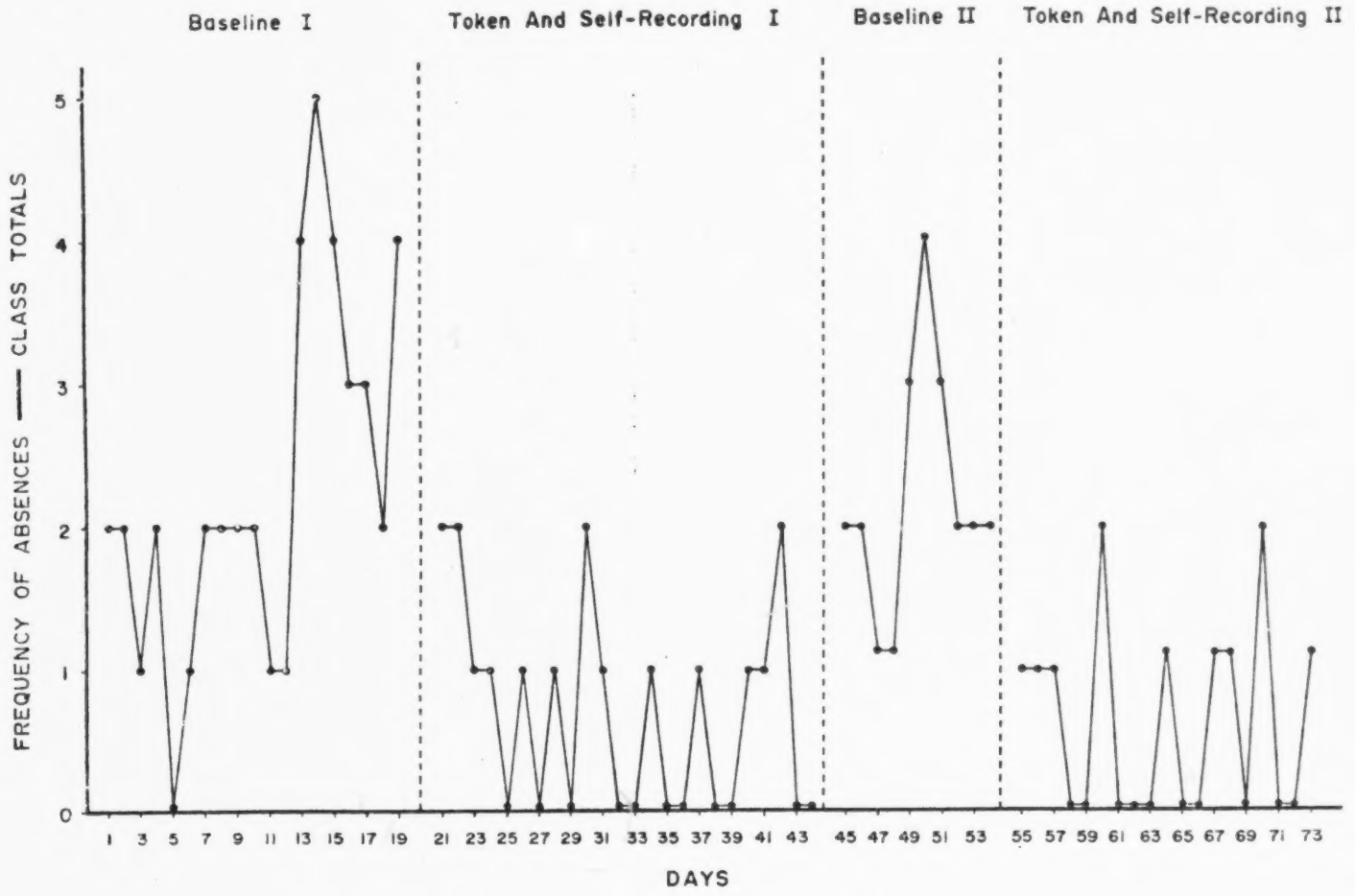
EVALUATION OF LEARNING ECONOMY

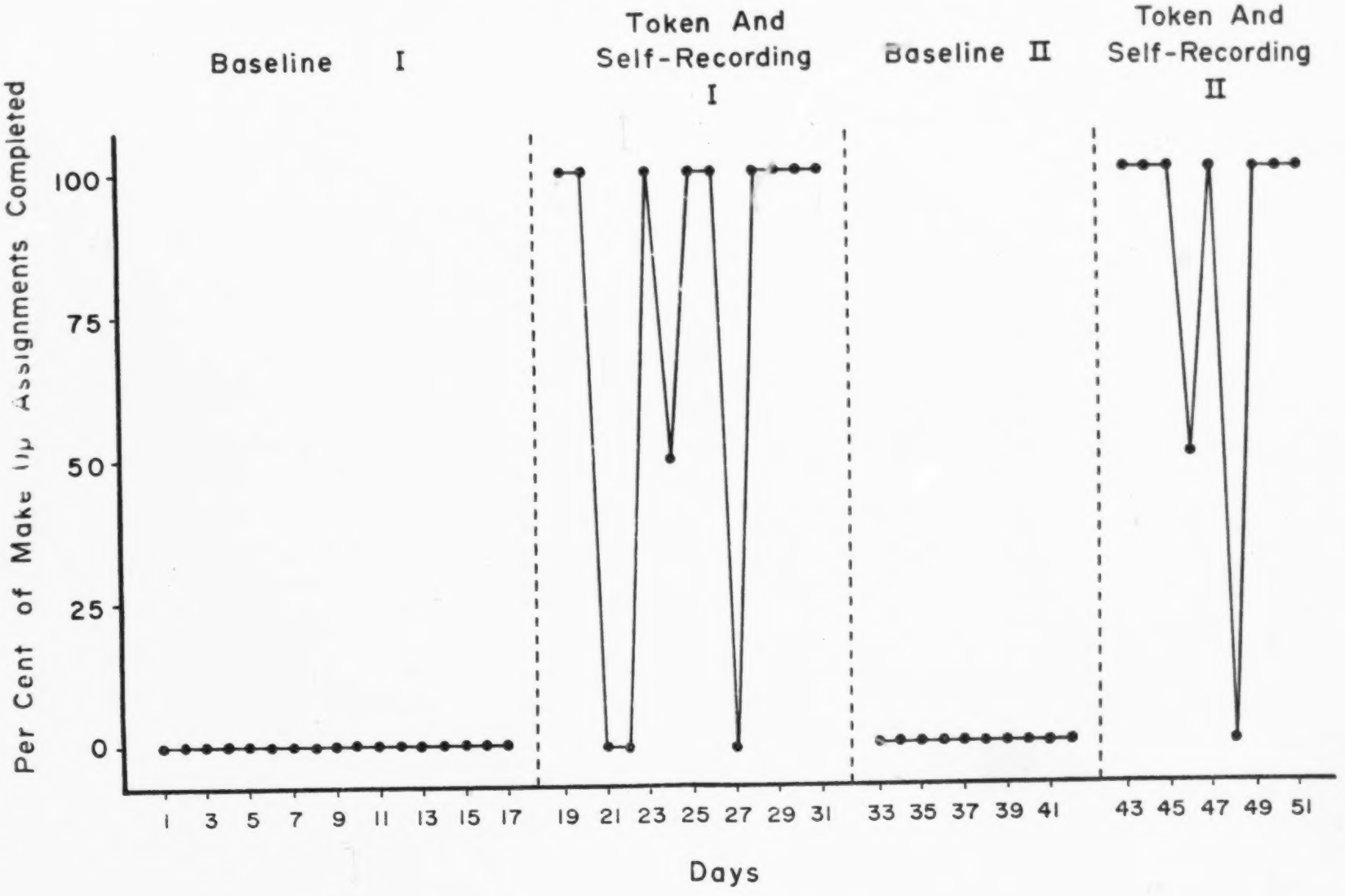
MONEY MANAGEMENT SKILLS

PER CENT CORRECT

| STUDENTS | PRE-EVALUATION | POST-EVALUATION | GAIN SCORE |
|---|---|---|---|
| A | 55% | 82% | +27 |
| B | 71% | 93% | +22 |
| C | 71% | 86% | +15 |
| D | 53% | 66% | +13 |
| E | 77% | 90% | +13 |
| F | 54% | 63% | + 9 |
| G | 74% | 81% | + 7 |
| H | 86% | 93% | + 7 |
| I | 84% | 91% | + 7 |
| J | 90% | 92% | + 2 |
| K | 85% | 86% | + 1 |
| L | 53% | 52% | - 1 |
| M | 90% | 89% | - 1 |
| CLASS MEAN | 72% | 82% | +10 |


PERCENT ACCURACY ON READING ASSIGNMENTS - CLASS AVERAGES
0
55
58
61
64
67
70
73
76
79
82
85
88
91
94
1
5
10
15
20
25
30
35
40
45
50
55
60
65
70
DAYS
BASELINE I
TOKEN AND SELF-RECORDING I
BASELINE II
TOKEN AND SELF-RECORDING II


Baseline I
Token And Self-Recording I
Baseline II
Token And Self-Recording II
FREQUENCY OF ABSENCES — CLASS TOTALS
0
1
2
3
4
5
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59 61 63 65 67 69 71 73
DAYS


Baseline I
Token And Self-Recording I
Baseline II
Token And Self-Recording II
Per Cent of Make Up Assignments Completed
100
75
50
25
0
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51
Days

ED 078632

# UNDERSTANDING AND PROGRAMMING FOR COGNITIVE AND MOTOR DEVELOPMENT

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Temple University

## Introduction

The accurate evaluation of a mentally retarded child's abilities is a complex and challenging task, particularly in cases where children have multiple handicaps or lack attending and/or communicative skills. In these instances, intelligence quotients and mental ages do not provide the information needed for classroom programming. What is needed is a means of assessing the child's capabilities and learning modalities which then can be used to develop meaningful programs in each of the skill areas: i.e., motor, language, social, and cognitive. Since many retarded children also exhibit inappropriate behaviors, methods to analyze and remediate such action also must be developed.

## Appraisal of Motor Development

As a person progresses from infancy through early childhood into late childhood, he proceeds through sequential stages of motor development. The teacher must know at what stage the child currently is performing if individually appropriate motor activities are to be provided. Because most motor or physical activity is observable, people tend to be aware of these stages. In fact, a child's progress through the various motor milestones of his first two years generally is recorded by his parents: e.g., the age at which he first sits up, stands alone, takes his first step, and, later, walks. Often a parent's first awareness of irregularities in his child's development stems from observed delays in the sitting-crawling-walking sequence.

Currently, there is available a variety of scales which outline motor development as it proceeds from birth through the sixth or seventh year. Their review reveals a necessary sameness of items because they all are scaling the same process.

Some record change at more frequent intervals and in a greater variety of areas, but basically they are duplicative, one of the other. The Denver Developmental Survey, a widely accepted test devised by Frankenburg and Dodds (1969) assesses four behavior areas - gross motor, fine motor, adaptive language, and personal/social development - in children under six. Two additional measures are introduced. Fokes' Developmental Scale of Motor Abilities (Stephens, 1971) is probably the most comprehensive scale available. In order to present discrete evidence of the directionality of development from birth onward, she combines items from numerous reliable and valid scales (Bayley, 1935; Covert, 1964, Gesell, 1940, 1954; Gesell and Armatruda, 1941; Ilg and Ames, 1960; Halverson, 1933; Jersild, 1954; Shirley, 1933; Strang, 1959; Van Riper, 1963; and Watson and Lowrey, 1952). The resulting measure is a continuous description of development: i.e., it contains a variety of items accomplished by the average child at each of the age levels listed. As with most motor scales, seven years is the upper age limit. Although there is a refinement and extension of motor skills and continued growth after this age, major motor development generally is accomplished by the child's seventh year. Items in the 12- to 18-month age level are presented as an example.

When Smeets (Stephens, 1971) desired a quick, concise motoric appraisal, he followed Fokes' method: i.e., he selected items from reliable, valid scales and arranged them in longitudinal sequence. The age span embraced by his scale is 12 to 48 months. Four areas are assessed - gross motor, balance, eye-hand coordination, and manual dexterity - with seven items in each area. The measure is efficient when an abbreviated screening is desired of a child who functions within the age limits of one to four years. If irregularities are found, a more comprehensive scale, such as Fokes', also should be used. If, through use of the Smeets scale, it is found that a child's performance exceeds the 48-month

level in some areas, another quick appraisal of motor integration and physical development is provided by Valett (1966). Again items from various developmental scales have been arranged in a two- to seven-year sequence.

As Fokes has noted: Anyone can use a scale, but validity depends on the teacher's or specialist's capabilities in observing particular forms of behavior. This capability stems from knowledge of child development and simple experience in observing children. The best way to gain experience is to indulge in child-watching. Watch children, at school, on the playground, or wherever you come across them. Watch what they do and precisely how they do what they do. The intelligent use of a motor scale also requires that the user have knowledge of the basic pattern of growth and development.

Intelligent use of scales can aid in determining a child's "motor age". More important, however, is the fact that scales provide information about previously acquired skills and indicate the directions that development will follow in the future.

Children who may be slow in other aspects may attain a degree of motor proficiency. Although slower rates of development or fixations in some stages may be noted among retardates, these children generally achieve motor skills unless physical handicaps, such as cerebral palsy, accompany the condition of retardation. In the case of deviate development, the tester should note both the level of operation and the rate of growth through the stages.

In summary, it should be remembered that motor control is the important characteristic of infancy and early childhood, and that its progress occurs in sequential fashion. (Fokes, 1971, in Stephens, pp. 72-73)

Programming for Motor Skills

To start the child to act motorically and to interact with the people and things around him may be one of the primary aims of the training program for

pupils previously excluded from school. Efforts to achieve this must be commensurate with the child's present level of functioning as determined by motor development scales. As the child's motor performance is profiled in various areas - i.e., gross motor, balance, eye-hand coordination, manual dexterity, etc. - irregularities probably will be noted. For example, a child may put on a sweater, a task which requires eye-hand coordination at a 42-month level; yet he may not be able to button it, a manual dexterity task also at the 42-month level. He may walk downstairs one step per tread, an activity which places him on the Smeets scale (Stephens, 1971) at 36 months in gross motor activity; yet he may be unable to walk on tip-toe, an ability which generally emerges at the 30-month level. Therefore, the individual program which would be devised for this child must provide activities commensurate with his varying levels of functioning. If the pupil has motor impairment rather than a delayed tempo of development, then suggested remedial activities should be obtained from the physical and occupational therapist.

To date, there is no one comprehensive motor development program that provides a variety of activities appropriate for each area at the different levels of motor development from birth to six or seven years. Brief suggestions for remedial activities which promote gross motor and fine motor skills from birth to five years have been made available by Denhoff (1967), and a project carried out by Stevens, McCarthy, and Billingsley (1969) on programs for severely retarded children has a sequence of developmentally appropriate activities for the severely subnormal. Other sources of sequentially related motor activities include Baumeister's Mental Retardation (1967), Baumgartner's Guiding the Retarded Child (1965), Bensberg's Teaching the Mentally Retarded (1965), Cratty's Motor Activities and the Education of Retardates (1969), Connor and Talbot's An Experimental Curriculum for Young Mentally Retarded Children (1966), Espenschade and Eckert's

Motor Development (1967), Frankel, Happ, and Smith's Functional Teaching of the Mentally Retarded (1966), Hatcher and Mullins's More Than Words (1967), Rosenzweig and Long's Understanding and Teaching the Dependent Retarded Child (1960), and Valett's The Remediation of Learning Disabilities (1967).

To be a successful programmer one must be able to analyze levels of development, analyze activities in terms of these levels, and match these two to the individual child's performance. Source books of suggested activities are helpful, but as experience is gained in the analysis of sequential development there will be an accompanying proficiency in identifying and varying activities appropriate to specific developmental levels.

Programming should begin with a skill the child has mastered. This skill is then incorporated into a slightly more complex activity geared toward the eventual attainment of the next developmental level.

As one attempts to initiate individually appropriate motor activities, there is swift realization that presentation of an activity does not insure the child's involvement. Children previously excluded from school may attempt to avoid motor activities as they turn from people and things, and engage in self-stimulating or self-mutilative behavior. They may let objects slip from their grasp rather than clutch them; they may push objects away rather than reach for them; they may engage in throwing or repetitive banging of an object rather than according it its intended use. As a result, skill does not increase in fine motor acts, or in eye-hand coordination and manual dexterity. Techniques employed in a project by Stephens, Smeets, Baumgartner, and Wolfinger (1970) to elicit interest, attention, and interaction employed Bruner's (1966) three levels of representation:

(1) enactive (the child is physically guided through motor activity);

(2) iconic (precise demonstration precedes the subject's attempt to perform an activity;

(3) symbolic (verbal instructions and explanations precede the subject's attempt).

(Stephens, 1971, p. 164)

Children who do not respond to a symbolic approach may profit from teaching geared to the enactive or iconic level: i.e., if a child does not roll a ball after receiving verbal directions (symbolic level), the trainer may demonstrate a roll (iconic level); if inability or disinterest continues, the child's hands may be guided through the act of rolling (enactive level).

Attempts to break established habits of inattentiveness, self-mutilative behavior, or destruction of objects may require a one-to-one, and in some instances, a two-to-one tutor-pupil ratio. For example, a subject cited by Stephens (1971) refused, upon entrance into a training program, to manipulate objects manually or to attend to them visually.

> "Initial training, which required two tutors, was at the enactive level; one person was responsible for seeing that the subject remained at the table, while the other obtained materials and guided the subject's hands in activities which involved kneading play dough, rolling a ball, and squeezing a sponge. The immediate goal was to promote spontaneous manipulation of objects: i.e., interaction with the immediate environment. Efforts, whether guided or self-initiated, were rewarded with cookies and candy (and/or social reward)." (Stephens, 1971, pp. 164-165)

Obviously, the initial training sessions were brief, sometimes five minutes or less, and a variety of activities were used, but as interest and cooperation were established, the sessions were increased gradually to a meaningful 20- or 30-minute period, and a single activity sustained attention for a major portion of the period.

"Justification is difficult for prolonged use of a two-tutors-to-one-pupil ratio; however, such concentrated effort may be supplied initially if it leads to spontaneous exploration and manipulation of objects, and later to self-initiated activity. Through such highly concentrated effort the child may be prepared for a one-to-one teacher-pupil tutorial situation, and in turn the one-to-one relation may prepare him for learning in a small group." (Stephens, 1971, p. 166)

Because early sensory-motor activity provides the framework for later cognitive development, programming for appropriate motor activities is essential to both physical and mental development. As a programmer, each teacher should develop a repertoire of activities appropriate for the various levels and areas of motor development, and have at his fingertips methods (such as behavior modification, use of Bruner's three levels of representation, etc.) which can be used in their implementation.

Appraisal of Cognitive Development

As one works with difficult retardates, and notes their responses to people and things - and they DO respond, although the response may be only a slight fleeting smile or frown, a flicker of the eyelid, a brief visual tracking of an object, or intensification of already apparent withdrawal - there is realization that some thought processes are in action. In most instances their cognitive development supersedes that of a neonate, yet because it is difficult to elicit their responses to standard test items, they frequently are regarded as untestable, and are treated as though they operate from an intellectual vacuum. Credit must go to Woodward (1959) for the initial realization that the level of intellectual development attained by these persons could be determined by appraising their behavior in terms of Piaget's stages of cognitive development. While working with

the severely retarded at Fountain Hospital in London, she found older children engaged in rather bizarre behavior: they were engrossed in observing their hand movements, an activity commonly termed "finding their hands". This is an activity which normally occurs in infants in the age range one-to-four months, and which Piaget terms "primary circular reactions". Further observation by Woodward indicated that, indeed, other aspects of the behavior of these same children were at this stage. The level of cognitive development achieved by children previously regarded as untestable had been ascertained.

Before enlarging upon the use of Piagetian assessments to diagnose reasoning in the retarded, a brief review of the theoretical framework from which they evolved seems appropriate. Appraisal of cognitive development by Jean Piaget, a Swiss psychologist, has revealed it to be an on-going sequential process which occurs from birth to maturity.

Because Piaget sought to determine the origins of intelligence, he analyzed cognitive growth and found four major stages of intellectual development occur between the neonates' simple reflex activity and the adults' ability to engage in abstract or formal thought. These stages are presented in Table 1.

Information on Piaget's first period of development can be gained from very withdrawn or highly disturbed children. All that is necessary is for the child to want some object, then to have the object placed in a position that requires the child to solve a problem in order to obtain it: e.g., use a nearby stick to push a toy towards himself, or turn a toy to get it through bars of a play-pen, or look under one, two, or more covers or screens for a toy that has been covered from view. Woodward holds that to describe as severely subnormal a child whose cooperation cannot be obtained is a comment on the examiner and his techniques rather than a statement about the intelligence of the child.

Through use of Piaget's hierarchical scale, individuals who previously have been viewed as an undifferentiated group, whose performance is more than -3 SD's from the mean, can be differentiated. Uzgiris and Hunt's measure, An Instrument for Assessing Infant Psychological Development (1964), can be adapted for use with older severely retarded subjects who appear to be functioning at a sensory-motor level. For criteria, Uzgiris and Hunt have selected situations which are easily elicitable and measurable, which are described by Piaget in his writings on the sensory-motor period, and which can be reliably observed by different people. The six series of behavioral schemata which comprise the instrument are:

1. Visual Pursuit and Permanence of Objects;
2. Development of Means for Achieving Desired Environmental Events;
3. Development of Schemas in Relation to Objects;
4. The Development of Causality;
5. The Construction of the Object in Space;
6. Development of Imitation.

(Stephens, 1971, pp 57-59)

An assessment comparable to the Uzgiris/Hunt measure has yet to be devised for the preoperational stage, a stage which normally occupies the period from approximately two to seven years. Persons working in the field of retardation are acutely aware of the needs for instruments which assess this stage because the severely and moderately retarded generally do not develop beyond this period. Although Educational Testing Service has announced the development of procedures - Cognitive Growth in Pre-school Children (Melton, Charlesworth, Tanaka, Rothenberg, Busis, Pike, and Gollin, 1968) - which measure areas previously identified by Genevan research as prime contributors to the intellectual development of the pre-operational child, there is no reported effort to extend use of these pro-

cedures to retardates. A listing of the areas of pre-operational thought which are covered by the instrument includes:

1. Classification Skills
2. Time
3. Distance
4. Number Conservation
5. Basic Language Structure

(Stephens, 1971, pp 61-62)

For children who perform at levels achieved by average children between the years two-to-six an instrument designed by Haeussermann (1958) is available. Here the goal is to determine potential for development

> "...through circumvention of certain assessment obstacles - visual, auditory, or motor impairment - which may be present. For example, in assessing a child with auditory impairment, effort is made to determine if his memory has served to compensate for the insufficiency of his auditory perception. Effort is made to sample the child's intactness as the nature and extent of the impairment are determined.
>
> "Areas included in the assessment are:
>
> 1. Recognition of concrete familiar life-size objects
> 2. Recall of missing picture from memory
> 3. Orientation in time
> 4. Recognition of symbols and forms
> 5. Color discrimination
> 6. Form discrimination
> 7. Multiple-choice/color-form sorting
> 8. Manipulative ability
> 9. Amount recognition
> 10. Eye motion and gross vision

"Since Haeussermann's evaluation was based on tasks which are sequential in development, the child's performance level indicates what is to be accomplished next....Because the previously excluded retarded frequently are multiply-handicapped, Haeussermann's techniques are particularly appropriate in their assessments...

"As emphasis on the early diagnosis of abilities or disabilities has increased, there has been demand for measures which identify motor, perceptual, or cognitive deficits, and which can be quickly and easily administered, preferably by the classroom teacher. The Valett Developmental Survey of Basic Learning Abilities (1966), for use with children two-to-seven years old, was designed to meet these needs."

(Stephens, 1971, pp 62-63)

Assessments which measure Piagetian reasoning at the concrete and formal levels have demonstrated usefulness in assessing the thought processes of the educable mentally retarded (Inhelder, 1968; Stephens, et al., 1969; Stephens, 1972). These studies indicate that retardates do not achieve formal thought. Since retardates previously excluded from school are a heterogeneous group, measures are needed which will assess cognitive development from the sensory-motor to the formal thought stage. The instruments cited in this discussion can be used for this purpose.

Programming for Cognitive Development

One of the most challenging tasks in the entire field of mental retardation is programming to promote cognitive development in severely subnormal and difficult retardates. The decades past have been characterized either by no effort or by unsuccessful effort. Now, however, we are entering an era of successful

endeavor. Major reasons for these positive results are: (1) the realization that the remedial activity must be congruent with the individual's current level of functioning; and (2) the availability of cognitive scales which measure lower levels of functioning: i.e., development from birth onward. (It is now possible to determine the functioning level of even the severely subnormal, and to outline succeeding levels.) Provided with this information, one seeks an activity which will serve to promote development from one level to the next. However, as one embarks on programming attempts, a reminder is given: you, as programmer, cannot make another person develop cognitively, but you can provide him with a variety of developmentally appropriate opportunities to interact with people and things, and, in turn, this interaction should foster cognitive development.

An overview of the sensory-motor sub-stages and examples of activities follow:

1. Reflex: Behavior which is characteristic of this first sub-stage includes sucking, kicking, and palmar grasp. At this time, infants also engage in visual pursuit of objects. As one worker in the field noted: "Although the infant 'looks' like mad, he can't do anything about it motorically."

To promote palmar grasp, fasten the infant's fingers over an object: e.g., dumb-bell rattle. Engage him in manipulated adduction and flexion of the legs. Tickle the side of his face with a feather to promote rooting and sucking behavior. In order to promote visual interaction, pass large brightly colored objects across his field of vision.

2. Primary Circular Reactions: At this sub-stage there is ability to follow an object (visually) through a $180^{\circ}$ arc. Hand-watching behavior is observed, and objects are grasped when both the hand and object are in view. There is ability to glance alternately from one object to another.

To promote visual tracking, hold a rattle in front of the child. If eye contact is not made immediately, shake the rattle, and turn the child's head until he is looking at the toy. As he attends, slowly move the rattle in a $180^{o}$ arc.

As the child observes his hand, bring a rattle into his field of vision, and touch his hand with the rattle. If no grasping attempt is made, curl his fingers around the toy.

3. Secondary Circular Reactions: During this period, the infant's glance will linger at the point where a slowly moving object disappeared. If a familiar object is partially hidden, it is recognized and retrieved (and thus there is evidence of mental imagery). At this stage an interesting object is kept active or in motion by means of secondary circular reactions.

Pass objects across the infant's visual field with increasing speed in order to promote rapid tracking.

Further the development of simple motor schemas through demonstrated use of a noise-maker (which requires shaking or hitting); then present the infant with the object. If he does not retain the toy or use it spontaneously, guide his hands through the appropriate movements.

4. Coordination of Secondary Schema: At this sub-stage, interest in objects is evidenced as new objects are accorded prolonged exploration. If the trainer performs familiar motor schemes, the child will imitate them. Release or the ability to "let go" is developing: there is evidence of picture recognition.

Because there is understanding of the relationship between the container and the contained, work with nested cylinders is appropriate. Initially, two which differ markedly in size are presented; later, the number of cylinders is increased and differences in size are lessened.

Games which involve retrieval of a completely hidden object can be initiated. Blocks and beads can be dropped into containers.

5. Tertiary Circular Reactions: Reasoning has proceeded until now the child can make an object perform its interesting activity by supplying the appropriate manipulation himself. He also is capable of discovering new ways to obtain a desired goal. Social interaction is evidenced through the schema of "showing".

Noise-making pull-toys are appropriately supplied at this substage. Wind-up toys, musical tops, etc., can be supplied for the child to operate. Activities which require location and identification (pointing and naming) of objects can be used to promote language, socialization, and classification. Understanding of gravity is gained in activities which involve rolling of objects down inclines, and pulling strings to obtain toys from overhead.

6. Invention of New Means through Mental Combinations: Deferred imitation of actions indicates the presence of memory and mental imagery and their use by the child. Ways are explored to activate a newly-acquired mechanical object. There is ability to make detours in order to retrieve an object from behind an obstacle. Foresight is shown in the selection of round objects to fit round holes, square ones for square holes, etc.

Games which require circumvention of obstacles to obtain objects are appropriate: e.g., retrieval of a ball from behind a chair. Ability in problem-solving can be extended to stacking rings sequentially, working with simple form boards, inserting and taking objects from containers.

As the child moves from the sensory-motor to the pre-conceptual stage, scales which set forth sequential development again may be used to suggest appropriate activities. Haeusserman's Developmental Potential of Pre-School Children (1958) provides an excellent framework. Appropriate test tasks are listed for each of

six mental age intervals between the years two to six; with adaptation and extension these may become sequentially arranged program activities.

Discussion by Painter (1968) of a program designed to promote conceptual development in the pre-conceptual child includes a listing of activities devised to establish skill in space, time, number, and body image concepts, as well as in categorical sorting. Connor and Talbot's An Experimental Curriculum for Young Mentally Retarded Children (1966) also lists activities designed to promote intellectual development in the pre-operational child. In addition, Lavatelli (1970) has provided an early childhood curriculum which is termed a Piaget program: i.e., it evolves from activities and processes characteristic of the pre-conceptual period. It is appropriate for any child functioning at this level, whether he be mentally retarded or normal.

As the child moves from the pre-conceptual period to the stage of concrete operations, there is a proliferation of readiness and elementary school activities which is available. An on-going project by Cawley (1972) provides math activities for the mentally retarded, and Kolburne (1965) outlines methods that have demonstrated their effectiveness for teaching writing, spelling, and reading to the retarded.

A potpourri of activities alone does not assure effective programs; knowledge of the child's level of functioning, his abilities and disabilities, and skill in the use of methods which are effective in eliciting attitudes conducive to learning also are needed.

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## TABLE 1

### PIAGET'S STAGES OF INTELLECTUAL DEVELOPMENT

| Stage and Approximate Age | Characteristic Behavior |
|---|---|
| **I. Sensory-motor operations** | |
| 1. Reflexive (0-1 month) | Simple reflex activity; example: kicking |
| 2. Primary Circular Reactions (1-4.5 months) | Reflexive behavior becomes elaborated and coordinated; example: eye follows hand movements. |
| 3. Secondary Circular Reactions (4.5-9 months) | Repeats chance actions to reproduce an interesting change or effect; example: kicks crib, doll shakes, so kicks crib again. |
| 4. Coordination of Secondary Schema (9-12 months) | Acts become clearly intentional; example: reaches behind cushion for ball. |
| 5. Tertiary Circular Reactions (12-18 months) | Discovers new ways to obtain desired goal; example: pulls pillow nearer in order to get toy resting on it. |
| 6. Invention of New Means through Mental Combinations (18-24 months) | Invents new ways and means; example: uses stick to reach desired object. |
| **II. Pre-operational** | |
| 1. Preconceptual (2-4 years) | Capable of verbal expression, but speech is repetitious; frequent egocentric monologues. |
| 2. Intuitive (4-7 years) | Speech becomes socialized; reasoning is egocentric; "to the right" has one meaning - to HIS right. |
| **III. Concrete Operations (7-11 years)** | Mobile and systematic thought organizes and classifies information; is capable of concrete problem solving. |
| **IV. Formal Operations (11 years upward)** | Can think abstractly, formulate hypotheses, engage in deductive reasoning, and check solutions. |

ED 078632

# TRAINING THE PREVIOUSLY-EXCLUDED RETARDATE

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The format used in Pennsylvania for a four-week workshop designed to meet the emergency need for teachers for previously excluded mentally retarded pupils is presented for the consideration of states faced with a similar situation. Through this exploratory effort, a model evolved which can be adapted for the use of specific institutions or agencies.

To describe the behavior cha acteristics of previously excluded pupils is impossible because they are a highly heterogeneous group. However, frequent causes for exclusion are low-level functioning, severe multiple handicaps, non-ambulatory, lack of language, not toilet-trained, and maladaptive behavior (e.g., self-mutilation, self-stimulation, withdrawn, autistic, destructive, and disruptive). To train these pupils is difficult, and special preparation is required for teachers who engage in the task.

Because Pennsylvania classes for previously excluded pupils were mandated to open in September 1972, there was little lead time to prepare the large number of teachers needed for these classes. Therefore, decision was made by the Office of Mental Retardation, Commonwealth of Pennsylvania, and the Department of Special Education, Philadelphia School District, to sponsor a four-week workshop at Temple University during the summer of 1972. The workshop was to prepare 60 trainers who had previous background in Special Education; in turn, these trainers (under the supervision of program coordinators) were to provide in-service training to teachers assigned to work with previously excluded pupils. Ideally, the workshop experience would have been provided to each teacher prior to her assignment. With some adaptation, the format used for the initial workshop for trainers could be used for one which sought to train teachers.

RATIONALE AND METHODOLGY

Because the need for personnel trained to work with low-functioning or difficult retardates was immediate, the four-week workshop sought to acquaint teachers, administrators, and supportive personnel with easily administered assessment devices whose results would provide program data, and to demonstrate the means whereby such data, when translated into training objectives, formed a sequential, developmental classroom program. If persons were to be afforded meaningful training, there was need not only to provide the concepts and theory of assessment and programming, but opportunity to implement the above in actual classroom situations. Accordingly, the training schedule was designed with an afternoon lecture/demonstration on a specific topic, followed by a morning on-site practicum which allowed the trainee to implement the demonstrated methods and techniques.

In light of the mentally retarded population to be served, five areas of assessment and programming received prime consideration: motor, language, cognitive, emotional/social development, and behavior management. Trainees were given nightly reading assignments from text-books and handouts, in correlation with topics to be discussed. Emphasis throughout the program was on locating a child developmentally within each area, and subsequently constructing a developmentally sequential training program.

Since many low-functioning children exhibit multiple handicaps, the trainees were exposed, via the afternoon sessions, to the techniques and theories of such remedial areas as physical therapy, occupational therapy, and developmental nursing. Additionally, in order to meet the needs of those persons engaged in programming for "crib-bound" or multiply-handicapped mentally retarded, lectures and field trips to existing programs were provided in these areas. Emphasis also was given to the training of parents and/or child-care personnel for optimum program implementation.

Specific objectives established for the workshop were:

1. Provide background information on legislation designed to create programs to meet the educational needs of retarded children, and also review the court mandate, "Right to Education Consent Agreement";

2. Promote understanding of motor, language, social/emotional, and cognitive development;

3. Establish ability to engage in behavioral assessment and analysis and to effect appropriate training and management strategies;

4. Develop and maintain programs commensurate with the needs of individual retardates;

5. Insure meaningful involvement of parents (or attendants) in achievement of training objectives, and thereby maximize program benefits as well as provide for program continuation;

6. Review instructional resource materials appropriate for staff development, and for the training of pupils and parents;

7. Supervise trainers as they construct training programs appropriate for their particular center or institution;

8. Select and/or develop techniques for evaluation of training programs;

9. Evaluate ability of trainers to develop and implement training models; such evaluation will require supervision by the Office of Mental Retardation during subsequent training programs.

These objectives served as focal points and "channel markers" for the total program. Each of the areas of assessment, training, and management was presented by a person experienced in that particular field. Texts of their presentations are provided in the final report of the workshop (Stephens and Manfredini, 1973).

The 60 trainers who participated in the workshop were enrolled in a Special Education seminar, "Training the Difficult Retardate". NOTE: There is acknowledgment that 60 participants is approximately three times the number generally

registered for one workshop. For this reason the project plans provided for one director, two co-directors, and six assistant instructors. During morning practicum periods the total group (N=60) was sub-divided into six groups of ten trainees each with an assistant instructor assigned to each sub-group of ten. In each sub-group the ten trainees worked in pairs as they assessed and provided activities for five previously excluded retardates. Each of the three directors was responsible for the supervision of two sub-groups of ten trainees. Ones of the goals of the demonstration workshop was to determine if maintenance of a six-to-one college student/instructor ratio makes possible the effective training of a large group.

The training day was scheduled from 8:30 A.M. to 4:30 P.M., five days per week. Morning sessions were held at the practicum sites, and began with a small-group (N=10) discussion of the previous day's lecture and demonstration. Small-group supervision was provided by the assistant directors. Each trainee was assigned to a specific child with whom approximately two hours a day were spent in actual implementation of assessment or program techniques. A brief seminar period concluded the morning activities. The total group (N=60) assembled for the afternoon program at 1:00 P.M.; this session, which usually consisted of a lecture and a demonstration, was followed by a question and answer period. A small-group (N=10) daily evaluation session marked the conclusion of the trainees' day. During this period each small-group, led by its own assistant director, made a critique of the day's program, discussed salient points and offered suggestions for areas which needed further development or alternate methods of presentation. Following the dismissal of the trainees, the workshop directors and assistant directors met for approximately one hour to review the trainees' performances and suggestions, and to formulate plans for the following day.

Since the workshop enabled the trainees to earn six graduate or undergraduate credits, a project paper was assigned. This paper was to include: (1) a developmental profile, and a program for the child or children with whom the trainee had been working, and (2) a proposal for in-service staff training of teachers employed by the Trainee's sponsoring organization, based on the workshop model.

The total design of the workshop was such that the trainees followed a sequential program pattern, moving from assessment to programming, theory to practice. An overview of the format is set forth in Table 1.

APPRAISAL AND EVALUATION OF THE TRAINING MODEL

Each participant engaged in an appraisal sequence which utilized daily evaluation sheets and a final appraisal form. These forms were designed to determine the effectiveness and the value of the workshop.

The end-of-the-day evaluations, which were completed by each of the six workshop groups, served as a means of assessing and improving the on-going program. The needs expressed by the groups were met by adding additional speakers and rearranging scheduled activities. Thus programming flexibility was planned which provided an individualized approach. The groups could see that their suggestions were being heard and acted upon. This two-way communication throughout the workshop enriched and improved the program and served as an important means whereby the Directors could assess the climate among the workshop participants. Were the lectures understood? Were they relevant? Could the participants implement what they learned? Were there any specific problems? These issues were constantly evaluated by the directors based on the daily and weekly evaluations.

Protocols responded to by each participant at the opening and again at the closing of the workshop provided appraisal forms which were tallied in order

to facilitate evaluation of the workshop. Review of these data reflects the fact that the workshop met a majority of the expressed needs, particularly in the areas of assessment and programming. Over 30% of the participants responded that there were no unmet needs, while items which were listed by others as unmet needs seemed to relate to specific job-related situations. In addition, the evaluation forms provided suggestions for subsequent workshops, namely a similar workshop geared toward (1) the older handicapped child, (2) appropriate classroom materials and resources, (3) educational program management and funding, (4) specific self-help problems and behavioral disorders, (5) an in-depth exploration of and practice in each of the areas presented in the current program, and (6) the non-ambulatory and blind-deaf mentally retarded person.

FOLLOW-UP

As plans for the workshop evolved there was ready acknowledgment that comprehensive training in the area of the multiply-handicapped retardate could not be accomplished within the short space of four weeks, although introduction to and experience with a working model was possible. As the trainees returned to their own institutions and sought to implement the techniques to which they had been introduced, supportive services were needed. To this end, monthly in-service follow-up sessions were provided trainees who functioned in public school settings. Trainees who were employed by state schools were provided supervisors to assist them in program implementation. Follow-up data indicate there has been successful diffusion of the training model. As field information has been gathered, there has been voiced need for the orientation of curriculum coordinators, educational directors, and school principals to the training model. Also, specific demonstration sessions on the management of the orthopedically handicapped were requested. Additional time was sought to evaluate instructional materials and to review toilet-training techniques. It was anticipated that

requests would be made for further consideration of the management of autistic-like behavior, but follow-up information indicates that the strong emphasis accorded this area during the workshop provided an approach which supplied needed understanding and basic techniques.

Educational deadlines set by court mandates leave little lead time for personnel training although they do create educational situations that require trained personnel. Intensive workshop periods followed by in-service training and on-going part-time college work are required if previously excluded retardates are to be provided coordinated meaningful programs.

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WORKSHOP SCHEDULE (First Week)

| | | | | |
|---|---|---|---|---|
| A.M.<br>Opening remarks; Introductions; Registration; Review of Schedule | Discussion of MH/MR Act; Discussion of Right to Education Consent Agreement | On-site practicum: Appraising Motor Development | On-site practicum: Assessing Language and Communication | On-site practicum: Appraising Cognitive Development |
| P.M.<br>Overview of Facilities | Appraisal of Motor Development: Demonstration & Lecture | Appraisal of Language & Communications Skills: Demonstration & Lecture | Understanding and Appraising Cognitive Development: Demonstration & Lecture | Understanding Social & Emotional Development: Demonstration & Lecture |

Second Week

| | | | | |
|---|---|---|---|---|
| A.M.<br>On-site practicum: Observing social/ emotional patterns | On-site practicum: Assessing Behavior | On-site practicum: Modifying autistic-like, self-mutilative, and repetitive behavior | Practicum: Profiling | On-site practicum: Constructing Behavioral Objectives |
| P.M.<br>Discussion and Demonstration: Techniques of Behavior Assessment & Analysis | Autistic-like, self mutilative, and repetitive behavior: Demonstration & Lecture | Profiling individual development: Demonstration & Lecture | Using profiles to establish behavioral objectives: Demonstration & Lecture | Programming for Motor Development: Lecture<br>Programming for Self-help Skills: Lecture & Film |

WORKSHOP SCHEDULE (Third Week)

| | | | | |
|---|---|---|---|---|
| A.M.<br>On-site practicum: Devise & Implement Motor and Self-help Program | On-site practicum: Devise & Implement Communication Program | On-site practicum: Devise & Implement Cognitive Program | On-site practicum: Devise & Implement Social/Emotional Development Program | On-site practicum: Devise & Implement Behavior Management Program |
| P.M.<br>Programming for Communicative Development: Lecture<br>Developing Receptive Language: Lecture | Programming for Cognitive Development: Lecture & Demonstration | Programming for Social/Emotional Development: Lecture & Film | Behavior Programming: Lecture & Demonstration | Parent & Family Training: Lecture<br>Role Definition & Function as Trainer: Lecture & Demonstration |

Fourth Week

| | | | | |
|---|---|---|---|---|
| A.M.<br>Demonstration: Parent Training | Special Interest Field Trips | Development of Training Proposals | Development and Evaluation of Participants' Training Proposals | Evaluation of Workshop<br>Closing Luncheon |
| P.M.<br>Programming for the Blind/Deaf Retardate: Lecture and Demonstration | Physical Therapy for the Low-Functioning Child: Lecture;<br>Developmental Nursing: Lecture | Role Playing - Review of existing program for difficult retardates: Lecture & Slides | | |

ED 078632

# VOCATIONAL EDUCATION

# for the

# MENTALLY RETARDED

by

Seymour Solop
PRINCIPAL

CHARLES CARROLL OCCUPATIONAL SCHOOL

Officially, the Charles Carroll Occupational School is known as a Retarded Educable Center...Secondary. Actually, we consider ourselves a Vocational School for the Educable Mentally Retarded Male Adolescent. We believe whole-heartedly in training our boys to enter the main-stream of life. We endeavor to teach school attitudes, social attitudes and job attitudes, so that when the boys do leave the Charles Carroll Occupational School, they leave as self-sufficient citizens.

Now, what do we give them when they are with us? Well, first of all, we have a number of levels. Being ungraded, we can move boys at will. We tend to tailor programs to fit the individual.

We get our clientele from two sources; one - a feeder school which picks up the Educable Mentally Retarded youngsters at age 13 from the isolated elementary schools. We get the boys at age 14 - 14½ from this school. Our second source is from Junior High Schools - boys who present problems within the classroom, - learning problems, disciplinary problems - are referred for psychological examinations. Lo and behold, all of a sudden at ages 14, 15, 16, the psychologists find these boys are retarded..retarded educably, retarded in all aspects of their work in life - so they come to the Charles Carroll Occupational School.

The first thing we do is put them into our Orientation class. Here, they spend most of their time with one teacher. Again, the emphasis being on school attitudes, social attitudes and job attitudes. In fact, everything in the school

is geared towards "how you would behave on a job, how you would act towards those around you and how you would act towards a supervisor." They go to each shop one period a week as an evaluative type of situation. They get a look at the shop... what's involved, the tools, the machinery, the program, and the shop teacher in turn gets a look at the Orientation boys. He evaluates them in terms of their interest and ability and their capabilities.

Then we go to our shop classes. We have two levels... one entry level where the emphasis is still on the academics with two periods of shop a day, and here the academic emphasis is on related academics. They learn the basics of the shop, they learn the words and the language of the shop. They learn to recognize those items that they will need. They get the actual practice...they learn how to handle the machinery.... they learn what to do with it, and they learn, again, the language of the shop. Now, this is the level the Orientation boys go to. When they have made their choice, we go to the Vocational teachers, ask them for their recommendations.... which Orientation boys should enter their shop. We then try to match the two, and so far, we have been pretty able to match the choice of the boys with the choice of the shop teachers.

In the lower level shop, they learn the basics, as we mentioned....they learn to develop their abilities. As openings arise in the upper shop class, then those who have exhibited the greater amount of ability and interest from the

lower shop class are moved up.

In the upper shop class, they spend approximately a half day in shop. The other half still in the academics, and of course, the academics again is still related. They can remain in the shop program until they are 17, 18 years old. But this is not enough. Remember, we want to get these boys ready for the main stream of life. We can't do it just by education. We can't do it just by teaching them a vocation. We have one step further to go, and this is job placement.

Our entire program is based upon three phases. (1) Pre-vocational - which is a trying-out, a testing, an exhibiting of interest, developing of ability and development of proper attitudes. The second level is the Vocational. This is where they get their shop training. This is where their job attitudes, their skills are sharpened and then of course, our final one is placement....full placement. During the vocational phase, we move into our work program. When the boys reach approximately 15½ - 16....if they have exhibited the proper job attitudes and the proper social attitudes and the proper school attitudes which involve attitudes towards others, attitudes with their supervisor, then we are ready to try them out on ajob.

They first start as part of the Neighborhood Youth Corps which allows them to work two hours a day after school. Now we use the Neighborhood Youth Corps for a dual purpose. One - to provide employment to those students who financially need the money and who meet the Federal financial guidelines. But

But we predominantly use it as a testing...a job testing - can they handle the situation...can they handle the attendance... can they handle the performance...can they handle the job attitudes? Now, if a boy shows he cannot - if we see that he has difficulty adjusting...if he has difficulty working with others, then he is pulled off of this program, put back in the school and kept there for a little more maturing. Let's take a young man who spends two hours a day on the job program and is under NYC. He's exhibited interest, he's exhibited all the necessary items - he's become successful. He's now ready for the second step in our job program, and this is half day work. Here he is put out in private industry...comes to school half day and goes to work half day...or comes to school two weeks and goes to work two weeks on a rotating basis. Here again, he is supervised by the Job Coordinator who watches him, talks to the Supervisors, handles his problems...works with the young man on his problems. When he becomes 17, if the boy has been successful up to now, he is ready for full-time employment.

Once he has full-time employment, then he is ready for graduation. What is graduation? Up until about two years ago, it really was nothing to the boys at the Carroll Occupational School. But now graduation means entrance into the world of work. When a boy reaches approximately 17½ - 18 which is the average age of the senior high school senior, has gone through our shop program and our work program, has been working full-time for at least three months, has exhibited success and has a promise of full-time employment, <u>then</u> we graduate him with a

high school diploma. When this happens, not only do our boys leave us working full time, but since banking is a part of the work program, they all have money in the bank.

Now let's take a look at our program itself. We have five shops: Auto Shop, Food Service, Hospital Practice, Upholstery and Tailoring. All of it is "hands on" learning. Everything in the school is vocationally geared. There is nothing other than vocational and its effect on the boys. Academics is relevant only because it is related directly to the shop and the vocation. Everything starts in the classroom. Here we have boys learning what it means to get a job. What is important towards success. Pay , jobs and money...these are the things that interest the boys..these are the things they want, and the academic teacher discusses this with them in terms of job attitudes and how to go about getting the raises and the money.

In Food Service, as we mentioned, everything is "hands on". The boys learn, the teachers demonstrate, the boys follow-through. Every boy gets a chance at different stations...making salads, handling the dishwasher, handling the cooking, and they all work together in teams. Everybody learns together...everybody has a hand in making things and doing things...including the cash register. They learn to handle the money, and here again, everything is relevant. In the academic classroom, they handle money...in terms of what it means in their particular food service positions.

In the Tailoring Shop, as in every shop, all the equipment and machinery is exactly the way they would find it in industry. For example, in the Tailoring Shop, we have power sewing machines, and a regular steam pressing machine with attached generator. The boys come in and the first thing they learn to do on the entry level positions is how to handle the sewing machine. They are given exercises in control; making the machine do things that they couldn't do before...circles, wavy lines, etc. They work out on these patterns , and then when they have learned the control they're ready to move into working with needle and thread on material. The boys learn to do alterations starting with the most simple to the most complicated. A young man has learned so much that he is bringing in material, items from his neighbors, having a little business for himself...everything is at a nominal fee, and yet the boys learn to do it...they enjoy it, and they move eventually to the point where they can start making their own clothes.

Here is a young man sewing together the waistband of the material as he makes his own pants. They learn to use the special machinery. This is a blind stitch machine which is used to put stitching on hems. Here, they use a button machine, and you notice the young man has safety glasses on so that when they do sit down at a machine, they learn not only how to handle it, but how to protect themselves in case of trouble.

Safety is an important factor in all areas. They learn hand sewing. Here a young man has taken the material that has

been cut out, again making his own pants, stitching it by hand where necessary. Here as you can see, even the tailor shop is an academic classroom. Everything carries over and everything related - one to the other, so that what they learn in the academic classroom and what they learn in the shop is relevant, has carry-over and has meaning, because they have learned it from two different people, working together. They can see not only what they have learned, but what they can do with what they have learned.

Here, a young man has learned to use the automatic cutter. He is cutting out the pattern for his own clothes. Here, they are cutting out by hand. Here a teacher is showing a young man the stitching where the stitching is needed, and here is the young man sewing items to put the zipper in, sewing items together and hand-stitching again. The red is from the serging machine which he has learned to use. It puts the binding on so that the material will not unravel. Then, pressing their clothes so that they will always look neat and last, but not least, here is your young man again with his pair of pants. Notice the feeling and the look of pride. This is something which you cannot take away from any young man...whether he is classified as retarded or is so called "normal". It is satisfaction at a job well done. Satisfaction that he has done a job with a minimum of help and now he has the end result which he can wear so that everyone can see.

Our Auto Shop is a little different. It is not just Auto repair and it is not just Service Station. The young men come

into this shop and start out with the basics. They start out with how to handle a gas pump. Here we have a "floating island" which was donated to the school by Atlantic Richfield Company. As you notice, this has the gas tank, the oil station and the credit card machine. You plug it in, you pull the lever on the gas pump and the dials turn. The boys learn how to handle this. They learn how to talk to a customer, and how to wait on a customer. They learn, again, the proper work attitudes, the proper customer attitudes, job attitudes and working with others. From there, they move into the other aspects of Auto Shop and working on automobiles. Everything is done as a team. One man cleans while the other man does the work. But everything is on a team basis, and everybody works together. Four days a week are spent in the Auto Shop, working on automobiles and again, everything is "hands-on". Everything has been done in the shop by the upper shop class, except automatic transmissions and body work. Every Friday, the boys go out to service stations and train under the supervision of the service station owner. They are supervised by the Auto Shop teacher, who travels around that day, stopping at the stations watching the boys, seeing how they operate and talking to the supervisors. On Monday, when they report back to school, their problems are discussed...what they did wrong, what they could do better... why they didn't show up that day, and what the supervisor-owner thought of them. Again, everything they do is correlated with what they do in school, and what they do in the academic classroom.

Our Hospital Practice class is a little different than the others. They take their training at a large University Hospital, but the cost for the training is underwritten by the Bureau of Vocational Rehabilitation. They pay the hospital a sum of $1,000 per year per student, for training. The boys receive a $1.00 a day for food, plus transportation money. BVR buys them the shoes and the uniforms. They spend a total of 36 weeks at Temple University Hospital from 8:30 in the morning until 11:30 every day. At the end of that time, they receive a Certificate of Competency. But again, everything begins in the classroom. Here is their classroom, which by the way, is in the process of renovation into a full hospital room. The room shows hospital practice. This is their room. This is their shop. This is the material they will be handling. Here a young man learns to make a bed. From here, they go into the hospital, and just like every other employee, they practice job attitudes and responsibility. Here, they punch in. They must punch in every day...put their cards in the proper slot so that the hospital knows they are there and whether or not to pay them for the day. Now where do they work? Well, the usual maintenance and so forth, but through the help, the trial and tribulations of the Hospital Practice teacher, who is a registered nurse, and who spends every morning of every day of the week at the hospital supervising the boys in different divisions, our boys work in places such as transportation, recovery room, and moving patients from the recovery room to the hospital rooms. Here are young men getting the bed ready to pick up a patient in recovery...here are young men getting IV material ready in the recovery room for the patients. Transportation....bringing them down to X-ray...to the different areas for tests. Here a young man has learned to handle patients, moving a patient from a chair to a wheel chair, prior to moving him into another area for tests. And, of course, again, we saw the young man who made his pants, there is nothing as satisfying and as gratifying

as a young man who has pride in what he is doing and pride in the job and is happy with what he is doing. Every six weeks, the boys are evaluated by the school Counselor, the Hospital Practice teacher and Hospital Personnel Division. Along with this, by the Bureau of Vocational Rehabilitation Counselor and the Supervisor of the Division in which they have been working. They discuss everything while the boy is there. They tell him his shortcomings; they tell him what he has been doing well; they tell him what he can and what he should concentrate on to better himself. Then he is moved to another division. Here, boys work in maintenance from sweeping up to using the maintenance machinery on the floors... handling records, filling out records, working in cafeteria services in the snack bar, dietary service and handling the trays in the patients' room. Again everything ends in the classroom. It began in the classroom with the training...it ends in the classroom with the academics and again, we keep going over what they have learned at the hospital....sharpening their skills and making them employable.

In addition to this, as I mentioned earlier, the academics is relevant. It is relevant to the particular job. It is relevant to the particular shop. We have a reading program...BRL (Behavioral Research Laboratories) where every academic teacher spends one hour a day per class...on the basics of reading... phonics, word attack and symbol recognition. If the young man does not know the alphabet, he starts there. He learns the alphabet and he moves into reading. If there are young men who cannot be handled within the classroom, becuase of limited skills, then the reading supervisor takes them and does additional work. As part of this, we have a Reading Aide per class who works under the direction of the teacher so that everything is in small groups, and we try to individualize as much as possible.

The greatest thing about this program is because it is programmed material, it has done a great deal in teaching the boys self-responsibility. They have

learned to wait for their turns in being helped, and they have grown in maturity. They have grown within the classroom, becuase as we mentioned earlier, everything in the school is aimed towards job attitudes, even discipline.

Now the services we have available to these boys...naturally, we have a Counselor and we have a Job Coordinator whose basic responsibility is to place boys on jobs, supervise them, and help them become successful. He acts in a counseling situation with the boys on the work program, so that eventually, the boys are serviced not just by a Counselor, or just by a Job Coordinator, but by both working in a team situation for the good of the young men. Of course, the parents are brought in at every step of the way so that they understand the situation, understand the job program, understand what is expected of their young men in school, on the job and what the school expects the parents to do at home.

We have Driver-Education to give these boys additional skills. At the age of 16, every boy receives Driver Education training, but not every boy passes the test at the same time. Because of limited skills and limited ability, some take longer to pass the driver's test, some take less time. We have had young men who have taken driver training for two years until they have passed it. It is all based upon their maturity level and their rate of learning. Now what happens when a young man cannot read? Well, adjustments are made. The academic teacher spends time prior to the boy's entering driver education....teaching them traffic sign recognition...what they mean and how they should be observed.

The Driver-Ed teacher works with individuals on the problems they have. Now, what do you do with a young man who is Spanish-speaking and has trouble understanding English? He solved his own problems, without the Driver Training teacher. He went out and had a relative tape the questions and answers in English and Spanish, listened to the tape and passed the test with no problem whatsoever.

As part of the Government Free/Reduced Lunches, our Food Service Shop is responsible for preparing and serving food to the entire school. The platters are naturally a hot platter, better than satelite feeding and we feed approximately 150 boys a day. In addition, we have a breakfast program which feeds approximately 75 - 85 boys every day, so that when they come to our school, they have their breakfast and their free lunch. Really, they have everything going for them in terms of learning. Their stomachs are full, and the attitude is there to learn...we come to school to learn. There is understanding on the part of the teachers. The security is there from the viewpoint of the boys and from the teachers. Now, how do we know if we are successful? First of all, our attendance has risen over the past 3-1/2 years from approximately 58% to 70%. The attitude and the feeling on the part of the boys....there is something going on....I want to be a part of it..I'm here. Now that does not mean we have 100% attendance. We still have approximately 35 boys who have never entered the doors of our school. They have been transferred to us, but they are non-attenders and nothing we have done has been able to get them to attend.

We realize that we can't get all boys in, but we also realize that if we have a program that is worthwhile, if we offer the boys something that is not just a holding action, but something valuable, something that they can learn, something that they can use to make themselves a decent self-sufficient life, then they will come. This is what is happening, so we at the Charles Carroll Occupational School feel that we are <u>really really</u> doing what we can to bring the Mentally Retarded back into the main stream - but not the main stream of education....the main stream of life. How do we know this? By comments which we have heard. By boys and parents who after being re-examined by a psychologist and

referred to regular grade have refused to go to the regular grade. Why? The parents' attitude is, "There is something worthwhile going on here...my son is learning a trade...he has a job or he will be getting a job...he will be earning money and he'll still get a high school diploma. This is where I want him. I want him to come out of school self-sufficient, employable and able to make something out of his life."

ED 078632

CONFERENCE PAPER

THE COUNCIL FOR EXCEPTIONAL CHILDREN 51ST ANNUAL

INTERNATIONAL CONVENTION

DALLAS, TEXAS APRIL 22-27, 1973

# THE DEMONSTRATION AND EVALUATION OF A COMMUNITY-BASED OCCUPATIONAL TRAINING PROGRAM FOR HIGH SCHOOL EMR STUDENTS: UTILIZING A PICTORIAL JOB TRAINING MANUAL

BY GREG D. WEISENSTEIN

TEACHER OF THE MENTALLY HANDICAPPED AND WORK-EXPERIENCE COORDINATOR

IT HAS BEEN WELL DOCUMENTED THAT A NUMBER OF FACTORS ARE WORKING TOGETHER IN LIMITING THE EMPLOYMENT SUCCESS OF THE EDUCABLE MENTALLY RETARDED. THE MAJORITY OF STUDIES TEND TO REVEAL INDIVIDUAL CHARACTERISTICS WHICH HAVE SERVED TO ACT AS PERFORMANCE INHIBITORS ONCE THE RETARDATE IS ALREADY EMPLOYED. THE OBVIOUS QUESTION ASKS IF THOSE FACTORS WHICH CAUSE FAILURE AFTER THE RETARDATE IS EMPLOYED ARE THE SAME SET OF FACTORS WHICH SERVE TO LIMIT HIM FROM GAINING EMPLOYMENT IN THE FIRST PLACE. MY EXPERIENCE WOULD SUGGEST THAT INDEED SOME OF THE SAME FACTORS WHICH ARE DETRIMENTAL TO THE EMPLOYED ARE ALSO DETERRENTS TO THOSE LOOKING FOR EMPLOYMENT, ALTHOUGH THE RANK ORDER OF THEIR IMPORTANCE VARIES IN THE TWO DIFFERENT SITUATIONS. EVEN THOUGH PERSONAL ATTRIBUTES RANK HIGH IN DETERMINING WHETHER THE RETARDATE WILL REMAIN ON THE JOB, ONCE HIRED, THE MOST CRITICAL FACTOR IN FINDING EMPLOYMENT IS HIS ACTUAL ABILITY TO LEARN TO PERFORM THE JOB UNDER NORMAL CIRCUMSTANCES AND WITHIN NORMAL TIME LIMITS SO THAT HE CAN COMPETE WITH MORE CAPABLE JOB SEEKERS WHO REQUIRE NO TRAINING AT THE LOWER LEVELS OF EMPLOYMENT.

CONSIDERING THESE FACTORS THAT INFLUENCE EMPLOYABILITY, THE TRULY EFFECTIVE VOCATIONAL PROGRAM FOR THE EMR AT THE SECONDARY LEVEL SHOULD BE A COMPOSITE OF TWO DISTINCT EXPERIENCES. THE FIRST EXPERIENCE IS COMMON TO MOST SPECIAL STUDENTS ENROLLED IN HIGH SCHOOL WORK-EXPERIENCE PROGRAMS AND INCLUDES GENERAL DEVELOPMENT IN WORK RELATED SKILLS RESULTING FROM VARIOUS WORKING EXPERIENCES. THE SECOND AND MUCH LESS COMMON EXPERIENCE IS SPECIFIC OCCUPATIONAL TRAINING. SINCE MANY SPECIAL EDUCATION PROGRAMS HAVE NOT INCORPORATED SPECIFIC OCCUPATIONAL TRAINING INTO THEIR CURRICULUM, MOST EMR STUDENTS ARE LEAVING THE PUBLIC SCHOOLS UNPREPARED TO COMPETE WITH MORE CAPABLE JOB SEEKERS AND ARE BEING ALLOTTED POSITIONS IN COMPETITIVE EMPLOYMENT THAT ARE NOT COMMENSURATE WITH THEIR POTENTIAL ABILITY LEVELS.

## PORT ANGELES PROJECT

IN RESPONSE TO THIS MARGINAL ECONOMIC ADJUSTMENT EXPERIENCED BY MOST

RETARDED ADULTS, THE FOLLOWING SPECIFIC OCCUPATIONAL TRAINING PROGRAM WAS DEVELOPED TO ACT AS AN ADJUNCT TO THE REGULAR HIGH SCHOOL WORK-EXPERIENCE PROGRAM CURRENTLY OPERATING IN PORT ANGELES, WASHINGTON. THE PURPOSE OF THE PROJECT WAS TO DEMONSTRATE THE FEASIBILITY AND EFFECTIVENESS OF SHORT TERM COMMUNITY-BASED TRAINING AND A LOCALLY DEVELOPED PICTORIAL JOB TRAINING MANUAL.

THE PROJECT WAS DESIGNED TO TEACH EMR GIRLS, WITHIN THE PERIOD OF SIX WEEKS, THE SKILLS WHICH WOULD ENABLE THEM TO GAIN EMPLOYMENT IN MOTELS AND HOTELS AS MAIDS. THE OCCUPATION OF NONHOUSEHOLD MAID WAS CHOOSEN AS THE AREA OF SPECIFIC TRAINING FOR THE FOLLOWING REASONS: ITS UTILITY AS AN OCCUPATION, THE APPARENT NUMBER OF JOB OPENINGS WHICH COULD OCCUR IN THE PORT ANGELES AREA, AND THE GENERALIZATION FROM OCCUPATIONAL TRAINING IN THIS AREA TO GENERAL SKILLS THAT ARE ESSENTIAL TO HOMEMAKING.

IT WAS HYPOTHESIZED THAT A CONCENTRATED SIX WEEK TRAINING PROGRAM, UTILIZING BOTH SUPERVISED ON-THE-JOB TRAINING WITHIN THE COMMUNITY AND THE PICTORIAL JOB TRAINING MANUAL, COULD PREPARE MENTALLY HANDICAPPED GIRLS FOR WORK AS NONHOUSEHOLD MAIDS AND THEREFORE FACILITATE THE JOB SEEKING PROCESS. IT WAS ALSO POSTULATED THAT THE TRAINING RECEIVED IN SUCH A PROGRAM COULD HAVE GENERALIZING EFFECTS UPON THE HOMEMAKING BEHAVIOR OF THE STUDENT PARTICIPANTS.

## PRELIMINARY SURVEYS

TWO PRELIMINARY SURVEYS WERE TAKEN PRIOR TO THE BEGINNING OF THE PROGRAM. THE FIRST WAS CONDUCTED WITHIN THE COMMUNITY AND SERVED TO MEASURE THE EMPLOYMENT POTENTIAL OF EMR GIRLS WITH NO EXPERIENCE OR TRAINING, SEEKING JOBS AS MOTEL OR HOTEL MAIDS, AND TO MEASURE THE COMPETITIVENESS OF THE SAME GROUP OF GIRLS WITH TRAINING AND EXPERIENCE, WHEN IN COMPETITION WITH MORE CAPABLE JOB SEEKERS.

## TRANSPARENCY OF EMPLOYER SURVEY FORM

THE RESULTS OF THE EMPLOYER SURVEY REVEALED THAT MOTEL AND HOTEL MANAGERS

IN THE PORT ANGELES AREA WOULD MORE READILY HIRE THE SLOW LEARNER IF SHE HAD HAD PRIOR TRAINING OR EXPERIENCE. ALTHOUGH ONLY TEN EMPLOYERS RESPONDED, A MAJORITY INDICATED THAT THOUGH HIRING PREFERENCE WOULD BE GIVEN TO NORMAL STUDENTS IF NEITHER NORMAL NOR SLOW STUDENTS HAD EXPERIENCE, SLOW STUDENTS HAD A DISTINCT EMPLOYABILITY ADVANTAGE WHEN PRE-TRAINED. IN ADDITION, A RESPONSE OF 70 PERCENT OR GREATER ON ANY ONE QUESTION WAS ESTABLISHED AS SIGNIFICANT IN GIVING DIRECTION TO PROJECT DEVELOPMENT.

## TRANSPARENCY OF PARENT SURVEY

THE SECOND SURVEY WAS THE FIRST OF TWO PARENT SURVEYS CONDUCTED TO DETERMINE THE HOMEMAKING BEHAVIOR OF STUDENT PARTICIPANTS BEFORE THEIR ENTRANCE INTO THE PROGRAM. A LATER PARENT SURVEY FOLLOWING THE CONCLUSION OF THE PROGRAM WOULD REVEAL ANY CHANGES THAT MAY HAVE OCCURRED AS A RESULT OF OCCUPATIONAL TRAINING.

## PROGRAM DEVELOPMENT

THE FIRST STEP IN PROGRAM CONSTRUCTION WAS TO DETERMINE ASPECTS OF THE JOB INVOLVED. TO DO THIS A JOB ANALYSIS WAS CONDUCTED AT THE MOTEL WHERE THE ON-THE-JOB TRAINING PORTION OF THE PROJECT WOULD TAKE PLACE. THE ANALYSIS REVEALED JOB SKILLS AND VOCABULARY THAT ARE DEFINITE PREREQUISITES OF MAID WORK. IT WAS ALSO DETERMINED THAT THE WORK PERFORMED BY MOTEL MAIDS COULD BE BROKEN DOWN INTO UNITS OF SIMILAR SKILLS SUCH AS DUSTING OR BED MAKING. THESE GROUPS OF SKILLS WERE REFERRED TO AS PHASES AND REPRESENTED SEVERAL SMALL JOBS OR SKILL AREAS.

A CURRICULUM GUIDE WAS NEXT DEVELOPED FROM THE JOB ANALYSIS TO COORDINATE THESE FOUR MAJOR COMPONENTS OF THE PROGRAM: SIX WEEKS OF IN-CLASS TRAINING TAKING PLACE AT THE HIGH SCHOOL SPECIAL EDUCATION HOME LIVING CENTER, FOUR WEEKS OF ON-THE-JOB TRAINING CARRIED ON CONCURRENTLY WITH THE LAST FOUR WEEKS OF IN-CLASS STUDY, THE SLIDE PRESENTATION OF JOB SKILLS, AND THE PICTORIAL JOB TRAINING MANUAL. DAILY ACTIVITIES IN THE HOME LIVING CENTER AND ON THE

JOB WERE BRIEFLY OUTLINED WITH THE PARTICIPATING TEACHER ENCOURAGED TO SUPPLEMENT IN AREAS OF STUDENT WEAKNESSES. TOTAL TRAINING HOURS WERE ESTABLISHED AT 45 FOR IN-CLASS WORK AND 30 FOR ON-THE-JOB TRAINING.

THE FINAL STEP IN PROGRAM CONSTRUCTION WAS TO DEVELOP THE PICTORIAL JOB TRAINING MANUAL. THE MANUAL WAS DEVELOPED FROM OVER 250 SLIDES OF EXPERIENCED MAIDS PERFORMING ROUTINE TASKS. OF THE SLIDES TAKEN, 140 WERE SELECTED TO BE ILLUSTRATED. FOR EACH ILLUSTRATION LOW READABILITY CAPTIONS WERE WRITTEN THAT WOULD SERVE TO CLARIFY THE SPECIFIC JOB SKILL THAT WAS BEING ILLUSTRATED. THE JOB VOCABULARY IS INCLUDED IN THE JOB TRAINING MANUAL TO PROVIDE STUDENTS WITH THE NECESSARY VOCABULARY TO COMMUNICATE WITH OTHER MOTEL STAFF MEMBERS BOTH DURING AND AFTER TRAINING, AND TO FAMILIARIZE STUDENTS WITH THOSE WORDS THAT ARE FOUND IN THE MANUAL. IN ADDITION, THE PERSONAL QUALIFICATIONS OF A MAID ARE LISTED UNDER "A CODE FOR MAIDS", AND THE NUMBER OF GUESTS PER ROOM HAS BEEN ESTABLISHED IN TERMS OF NUMBER AND SIZE OF BEDS LISTED UNDER "MATHEMATICS". THE MANUAL WAS PREVIEWED AND A COPY GIVEN AT THE BEGINNING OF TRAINING TO EACH OF THE PARTICIPATING STUDENTS TO BE USED AS AN INTEGRAL PART OF THE IN-CLASS AND ON-THE-JOB PORTIONS OF THE PROGRAM.

TRANSPARENCY OF 2ND PAGE OF TRAINING MANUAL

TRANSPARENCY OF SAMPLE PAGE OF TRAINING MANUAL

## Evaluation Techniques

THROUGHOUT TRAINING THE ELEMENT OF TIME SERVED AS BOTH A DIAGNOSTIC DEVICE AND AN EVALUATION TOOL. PRIOR TO THE START OF THE PROGRAM, THREE EXPERIENCED MOTEL MAIDS WERE TIMED DURING EACH PHASE OF THE JOB OVER A THREE WEEK PERIOD. RESULTING TIMES WERE COMPUTED AS MINIMUM, AVERAGE, AND MAXIMUM TIMES BOTH FOR EACH JOB PHASE AND FOR THE CLEANING OF AN ENTIRE MOTEL ROOM. THE AVERAGE MINIMUM ROOM CLEANING TIME COMPUTED FOR THE THREE MAIDS WAS 35 MINUTES AND 7 SECONDS WHILE THE AVERAGE MAXIMUM TIME WAS 52 MINUTES AND 22 SECONDS. MAXIMUM TIMES REPRESENTED TARGET TIMES FOR THE PROGRAM PARTICIPANTS

AND SERVED AS INDICATORS OF SKILL EFFICIENCY OR DEFICIENCY IN A PARTICULAR PHASE OF THE JOB.

## TRANSPARENCY OF EXPERIENCED MAIDS DATA

DURING ON-THE-JOB TRAINING STUDENT PERFORMANCE WAS CONTINUALLY MONITORED AND CHARTED THROUGH EACH JOB PHASE, WITH QUALITY HELD CONSISTENT SO THAT INFERIOR WORK WOULD BE REPEATED UNTIL THE QUALITY THAT HAD BEEN ESTABLISHED BY THE MOTEL MANAGER WAS ATTAINED. INCREASES OF TIME THUS REFLECTED INFERIOR WORK DURING THE AFFECTED JOB PHASES. AS STUDENTS BECAME MORE COMPETENT IN THE VARIED JOB PHASES, THEIR REDUCED TIMES REFLECTED FEWER MISTAKES AND AN INCREASE IN THE QUALITY OF WORK. WHEN THE STUDENT'S MEASURED ROOM CLEANING TIMES APPROXIMATED THE AVERAGE MAXIMUM TIMES RECORDED BY THE EXPERIENCED MAIDS, SHE WAS CONSIDERED ADEQUATELY TRAINED TO ENTER COMPETITIVE EMPLOYMENT.

## Project Participants

FOR INVOLVEMENT IN THE PROGRAM EIGHT GIRLS OF VARYING INTELLECTUAL ABILITY LEVELS WERE CHOSEN FROM A SPECIAL EDUCATION CLASS FOR THE MENTALLY RETARDED AT PORT ANGELES HIGH SCHOOL. FOR THE PURPOSES OF THE PROJECT, NO CRITERIA WAS PLACED ON HAVING HAD PRIOR EXPERIENCE AT ANY ONE LEVEL OF WORK-EXPERIENCE TRAINING FOR ENTRY INTO THE PROGRAM. INTELLIGENCE TEST SCORES WERE RECORDED FOR EACH STUDENT, AND THE WIDE RANGE ACHIEVEMENT TEST WAS ADMINISTERED SO THAT THE LEVEL OF INTELLECTUAL FUNCTIONING AND PRIOR ACADEMIC ACHIEVEMENT COULD BE CONSIDERED WHEN REVIEWING THE PROGRAM RESULTS. NO ATTEMPT WAS MADE TO STANDARDIZE THE SUBJECT POPULATION ON MENTAL, PHYSICAL OR ACHIEVEMENT LEVELS.

THE PARTICIPATING SCHOOL AND MOTEL PERSONNEL WERE AS FOLLOWS: WORK EXPERIENCE COORDINATOR (PROJECT DESIGNER AND COORDINATOR), THE SPECIAL EDUCATION HOME AND FAMILY LIFE INSTRUCTOR (IN-CLASS AND ON-THE-JOB INSTRUCTOR), TWO MOTEL MAIDS AND THE MOTEL MANAGER (CONSULTANTS, GUEST SPEAKERS AND INSTRUCTOR AIDES), AND TWO HIGH SCHOOL VOLUNTEERS (TIMERS AND QUALITY SUPERVISORS).

## Project Inception

The project was designed so that the on-the-job training portion of the six week program took place during the early spring, making optimum use of the participating motel with little disturbance, if any, to their seasonal trade. Early spring seemed best since maids are in greatest demand during summer months. Thus, training and the move into competitive employment was kept as close together as possible.

## Results

Results of this project should be interpreted with consideration given to three distinct limiting factors which were at work in affecting the program data: internal inconsistencies resulting from slightly different room cleaning schedules used by the experienced maids, unchecked variables which may have affected learning, and lack of a longitudinal follow-up study.

Comparative data was received from three sources: pre and post tests, the initial parent survey and follow-up, and periodic monitoring of phase times throughout the four weeks of on-the-job training. Arithmetic graphs designed for the project were used to record times from both the pre and post tests and monitoring, with each job phase being represented on a different graph for every student. Target times were also provided on each of the corresponding graphs.

Transparency of graph for cleaning bathroom

Student performances during the first period of monitored times substantiated the pretest findings and were indicative of significant skill deficiencies in both household skills and skills required of a motel or hotel maid. It was obvious at this point that none of the students were prepared to enter competitive employment and could not compete with more capable job seekers. Even if employment had been attained without job preparation, increases in cleaning times during the first week of on-the-job training would have rendered several students susceptible to criticism.

FOLLOWING SIX WEEKS OF PROGRAM INVOLVEMENT, ALL PARTICIPANTS HAD EXPERIENCED A 50 TO 75 PERCENT REDUCTION IN TIME ON MANY JOB PHASES, WITH SEVERAL STUDENTS BETTERING THE AVERAGE TOTAL ROOM CLEANING TIME RECORDED BY THE EXPERIENCED MAIDS. SIX OUT OF EIGHT PARTICIPATING STUDENTS WERE ABLE TO APPROXIMATE OR BETTER THE ORIGINAL TARGET TIME OF 52 MINUTES AND 22 SECONDS FOR CLEANING AN ENTIRE MOTEL ROOM. THESE SIX STUDENTS ARE CURRENTLY CONSIDERED TO BE WORK READY, CAPABLE OF ASSUMING POSITIONS IN COMPETITIVE EMPLOYMENT AS MOTEL OR HOTEL MAIDS.

NOT ONLY WAS PROJECT SUCCESS MEASURED IN TERMS OF DECREASED CLEANING TIMES, INCREASED EMPLOYABILITY, AND HIRED TRAINEES, BUT ALSO IN TERMS OF THE AMOUNT OF LEARNING TRANSFER THAT WOULD OCCUR BETWEEN THE TRAINING PROGRAM AND HOME ENVIRONMENT. HERE THERE WAS A CORRELATION BETWEEN SUCCESSFUL PROGRAM PARTICIPATION AND THE AMOUNT OF LEARNING TRANSFER, WITH ALL STUDENTS REPORTED TO HAVE EXPERIENCED SOME IMPROVEMENT IN HOMEMAKING SKILLS. THE SECOND PARENT SURVEY INDICATED THAT THE MOST MEANINGFUL IMPROVEMENTS IN HOMEMAKING BEHAVIORS SEEMED TO RESULT FROM THE STUDENT'S REALIZATION OF THE IMPORTANCE AND NEED FOR CLEANLINESS AND ROUTINE HOUSEKEEPING. HOWEVER, THE DEGREE OF IMPROVEMENT THAT HAD BEEN CONCEIVED IN THIS AREA DID NOT MATERIALIZE. MANY STUDENTS WERE STILL REFLECTING A NEED FOR HOMEMAKING GUIDANCE.

## Discussion

A SUBJECTIVE ANALYSIS OF THE INSTRUCTIONAL MATERIALS INDICATED THAT THE TRAINING MANUAL WAS THE MOST VALUABLE MEDIA USED. IT FACILITATED THE LEARNING PROCESS BY PROVIDING A STIMULUS FOR RECALL, ESTABLISHING A CLEANING SEQUENCE TO BE FOLLOWED AND REPORTEDLY SHORTENING THE TRANSITION FROM IN-CLASS STUDIES TO ON-THE-JOB TRAINING.

AS TRAINING SITES THE MOTEL AND THE HOME LIVING CENTER PROVED TO BE SATISFACTORY. THE HOME LIVING CENTER WAS EQUIPPED WITH FURNISHINGS GENERALLY FOUND IN A MOTEL ROOM AND SERVED AS AN EXCELLENT LOCATION FOR THE PRE AND POST TESTS AS WELL AS INITIAL TRAINING. THE MOTEL USED FOR ON-THE-JOB TRAINING INCLINED TO

BE MORE STRICT AND DEMANDING THAN OTHER MOTELS IN THE PORT ANGELES AREA AND THEREFORE PROVIDED AN EXCELLENT TEST OF THE TRAINING PROGRAM. IT WAS FELT THAT THE STUDENTS WHO HAD REACHED TARGET TIME AND WERE PREPARED FOR COMPETITIVE EMPLOYMENT WOULD BE CAPABLE OF MEETING THE STANDARDS ESTABLISHED BY ALL OTHER MOTELS IN THE IMMEDIATE AREA, IF THEY HAD FIRST MET THE STANDARDS IMPOSED BY THE TRAINING MOTEL.

TIME PROVED TO BE AN EXCELLENT UNIT FOR EVALUATING STUDENT PERFORMANCE. SINCE TIMINGS WERE USED FOR BOTH THE PRE AND POST TESTS AND FOR MONITORING ON-THE-JOB BEHAVIOR, THE TWO EVALUATIVE DEVICES COULD BE COMPARED ON THE BASIS OF EQUAL TIME UNITS. ALTHOUGH TIME DID NOT REFLECT THE DIRECTION OF CHANGE, WHETHER TOWARD QUANTITY OR QUALITY, IT WAS SENSITIVE TO SUFFICIENTLY SMALL INCREMENTS OF POSITIVE OR NEGATIVE CHANGE.

## PROGRAM EXPENSES

A BREAKDOWN OF THE PROGRAM EXPENSES, EXCEPTING CLERICAL AND LABOR, FOLLOWS:

### TRANSPARENCY OF PROGRAM EXPENSES

| | |
|---|---|
| 250 COLORED SLIDES (PURCHASE AND PROCESSING) | 65.00 |
| JOB TRAINING MANUAL ILLUSTRATIONS | 75.00 |
| 1ST PRINTING OF THE MANUAL | 35.00 |
| REPLACEMENT OF CLEANING SUPPLIES | 10.00 |
| TRANSPORTATION @ 10¢ A MILE | 16.00 |
| CERTIFICATES OF COMPLETION | 2.00 |
| | $203.00 |

THIS EXPENSE FIGURE REPRESENTS A PER STUDENT COST OF APPROXIMATELY $25.00 FOR THE SIX WEEKS OF TRAINING. HOWEVER, THE LARGER COST ITEMS SUCH AS SLIDES AND THE ILLUSTRATIONS FOR THE JOB MANUAL ARE NOT CONSUMABLE MATERIALS AND CAN BE USED IN SUBSEQUENT YEARS. THEREFORE, SUBTRACTING THE LARGER NONCONSUMABLE EXPENSES WOULD REDUCE THE PER STUDENT COST TO SLIGHTLY UNDER $8.00 PER STUDENT.

## Short Term Follow-up

A short term follow-up of program participants revealed the following positions currently held one year after training: two participants are working in a local sheltered workshop (the same two that did not achieve target times), two are attending vocational schools, two are still in the special education program, one is working at another job for a higher rate of pay, and the last is employed as a motel maid. Although most trainees are not now employed in the motel industry, it is important to note that many could be and that the single employee in the industry recently acquired her job as a result of her training. Initially three trainees had been hired as part-time summer employees following the conclusion of the program.

## Conclusion

Instructional devices such as the pictorial job training manual, on site experiences, and slide presentations have proven extremely successful in teaching vocational skills to project participants. The duplication of these devices for training the mentally handicapped in other occupational areas or home living skills may prove equally effective. It is hoped that future investigators will see fit to apply tighter controls in studies to determine more fully the value of the instructional techniques originated in this project.

Copies of this project are not yet available, but job training manuals may be obtained for $2.00 a copy by writing to me at Port Angeles School District.

TRANSPARENCY OF ADDRESS

T R A N S P A R E N C I E S

## RESULTS OF THE EMPLOYER SURVEY

Which person would you hire first?

40% A slow learning student with no experience

60% A normal student with no experience

Which person would you hire first?

80% A slow learning student with experience

20% A normal student with no experience

Which person would you hire first?

70% A slow learning student with experience

30% A normal student with experience

How does job training effect your hiring practices?

60% I would rather hire someone who is pre-trained

40% I would rather hire someone who I could train

Would you like to learn more about our occupational training programs?

10% Yes! You can call and make an appointment to see me.

70% No! I am not interested at this time.

20% I am interested in hiring someone from the training program. Please call me.

Summary of Raw Data From Home Survey

| SKILL | Does Job At Home | Does Not Do Job At Home | Is Not Able To Do Job At Home | Does Good Job | Does Fair Job | Does Poor Job |
|---|---|---|---|---|---|---|
| Removing and cleaning dirty linens (towels, sheets, etc.) | A,B, C,D, F | E,G, H | | B,F | A,C, D | |
| Making the beds | A,B, C,D, F,H | G,E | | A,B, D,F | C,H | |
| Doing the dishes | A,B, C,D, F | E,G, H | | A,B, C,F | D | |
| Dusting | A,B D | C,E, F,G,H | | B,D | | A |
| Cleaning the bathroom | A,B, C,D | E,F, G,H | | B | A,C D | |
| Cleaning the bathroom and/or kitchen floor | B,D | A,C, E,F, G,H | | B | | D |
| Folding and placing towels in the bathroom | A,B, C,D | E,F, G,H | | A,B | C,D | |
| Vacuuming | A,B, D,F | C,E, G,H | | B,F | D | A |
| Cleaning up after self | A,B,C D,F,G H | E | | B,D | A,C F,G | H |
| Doing odd jobs around the house, (carrying out garbage, etc.) | A,B,C D,F,G H | E | | B,D F | A,C G,H | |

## A CODE FOR MAIDS

1. She shows up at work on time.
2. She dresses neatly.
3. She wears a white uniform.
4. She takes a bath everyday.
5. She keeps herself clean and uses a deodorant.
6. Her hair looks good.
7. She gets enough rest and exercise.
8. She is friendly.
9. She works fast and does a good job.
10. She does not touch things that belong to the guest.
11. She works hard to do a better job.
12. She does not get mad when her boss tells her that she did something wrong.
13. She calls when she is sick and cannot come to work.
14. She is honest and is not lazy.

## WORDS YOU SHOULD KNOW

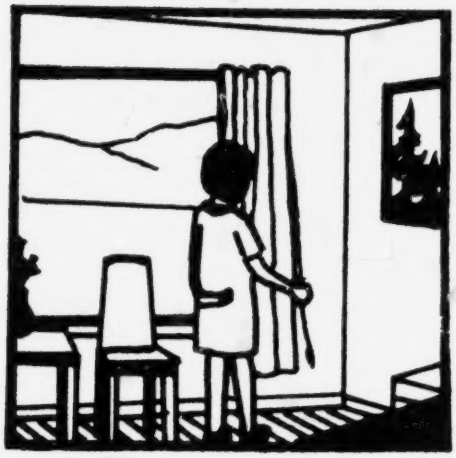
ammonia
ash tray
bath mat
bath towel
base boards
bedspread
Best Western
blanket
bottle opener
check-out time
cleanser
closet shelf
coat hanger
Coffee-mate
coffee pot
counter top
cup liners
crib
deodorant
disinfectant
door frame
double bed
dusting
electric heater
envelope
feet
furniture
furniture polish
glass door rail
guest
hand towel
head board
hospital corner
ice bag
ice bucket
inches
inspector
Kleenex
lamp shades
laundry
light fixtures
linens
luggage rack
maid
maid's carry-all basket
maid's closet
manager
match book
mattress
mirror
motel
office girl
picture frame
pillow case
plastic spoon
porcelain
post cards
queen size bed
rag bag
reservation
refill
routine
sanitize
schedule
seam
sheets
shower
shower rail
sink fixtures
sink stopper
sorting
standards
stationary
stay-over
strip beds
sugar
suite
supplies
telephone
tile
toilet mop
towels
towel bar
towel rack
triangle
tub fixtures
twin bed
vacuuming
wash cloth
waste basket
white glove test

## MATHMATICS

How many people can stay in a room? The size of the beds will tell you. Here is a chart that you can use.

1 twin bed ..... 1 person
2 twin beds ..... 2 people
3 twin beds ..... 3 people
1 double bed ..... 2 people
2 double beds ..... 4 people
1 twin bed and 1 double bed ..... 3 people
1 queen size bed ..... 2 people
2 queen size beds ..... 4 people
1 twin bed and 1 queen size bed ... 3 people

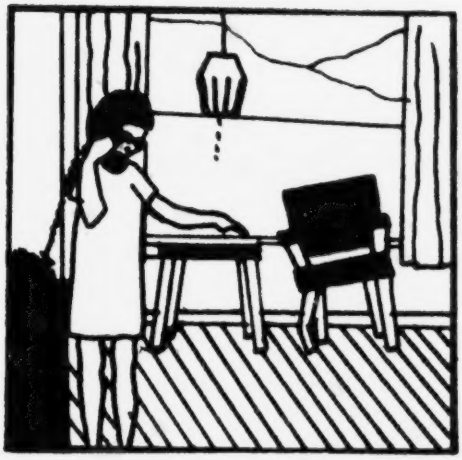
# CHECKING THE ROOM



Open the drapes all the way. This will let the office know where you are. It will also give you more light.

Turn on the TV. When it warms up you will check it. Do other things while it is warming up.

Try all of the lights. If any of the lights do not work, put in new light bulbs. If the light still does not work, tell the office girl.

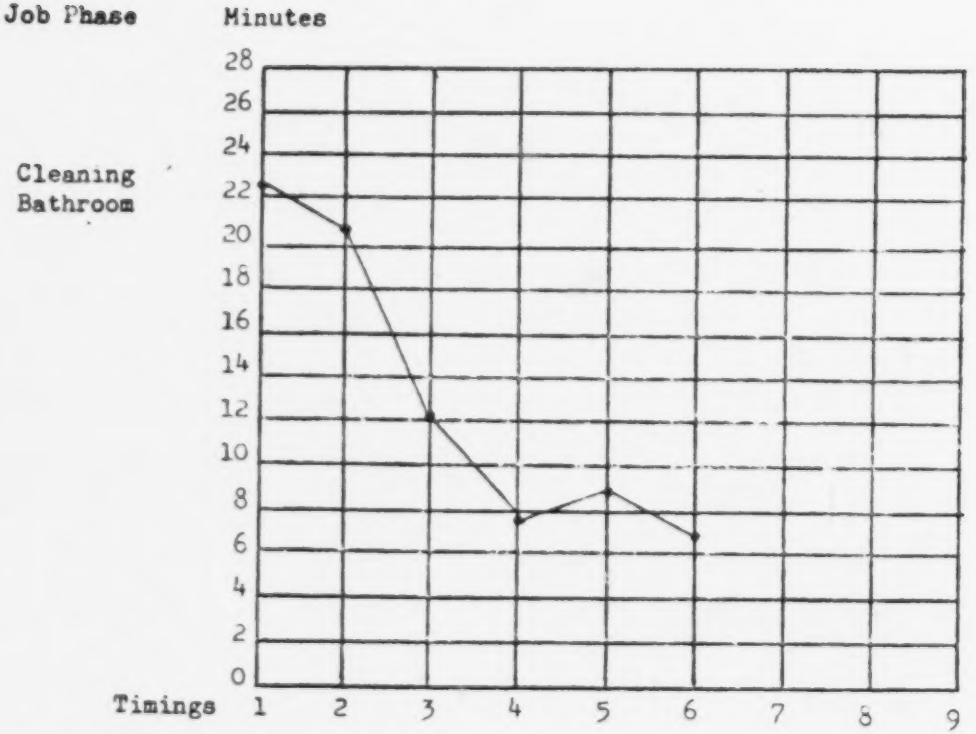


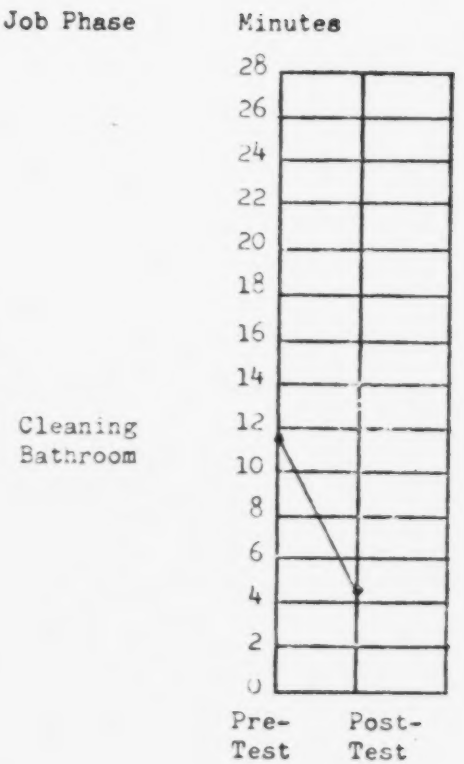
If any furniture is broken, call the office. Tell the office girl what is broken.

Time Recording Chart For Maid Training

| | Entire Room | Procedures for Starting Work | Room Check | Strip Bed and Pool of Dirty Linens | Maid to Laundry Room | Making the Bed | The Coffee Maker | Dusting | Cleaning Bathroom | Replacing and Cleaning Towels in Bathroom | Vacuuming | Procedures to Close | Miscellaneous Work-Time Saving Devices |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maid A | | | | | | | | | | | | | |
| Average | 40:17 | 12:00 | :34 | 1:11 | 2:23 | 3:48 | 1:08 | 5:13 | 7:2 | :3 | 3:15 | :3 | 2:0 |
| Maximum | 54:43 | 15:00 | :45 | 4:37 | 3:00 | 6:44 | 1:49 | 6:30 | 9:3 | 2:- | 4:0 | :05 | 2:00 |
| Minimum | 32:13 | 10:00 | :17 | :43 | 1:50 | 3:00 | :48 | 3:30 | 5:4 | :2 | 2:- | :02 | 1:00 |
| Maid B | | | | | | | | | | | | | |
| Average | 45:30 | 2:00 | 1:0 | 2:00 | 2:3 | 4:30 | 3:0 | 4:3 | 10: | 2:0 | 3:15 | 3:00 | 10:- |
| Maximum | 50:00 | 2:00 | 1:00 | 3:00 | 3:00 | 5:- | 3:00 | 3:- | 12:3 | 2:00 | 4:00 | 3:- | 12:00 |
| Minimum | 38:00 | 2:00 | 1:00 | 1:30 | 2:0 | 2:3 | 3:00 | 2:00 | 6:00 | 2:00 | 2:0 | 3:- | 1:00 |
| Maid C | | | | | | | | | | | | | |
| Average | 22:10 | NT | :15 | 1:24 | 2:57 | 7:25 | :31 | 1:00 | 6:54 | :05 | 2:00 | :05 | NT |
| Maximum | 25:22 | NT | :15 | 1:26 | 2:21 | 10:00 | :40 | 1:00 | 7:13 | :05 | 2:00 | :05 | NT |
| Minimum | 17:98 | NT | :15 | 1:21 | 2:15 | 5:15 | :18 | 1:00 | 5:25 | :05 | 2:00 | :05 | NT |
| Cumulative Averages For Maids A and B | | | | | | | | | | | | | |
| Average | 42:54 | 7:00 | :47 | 1:36 | 2:27 | 4:10 | 2:05 | 3:39 | 8:45 | 1:24 | 3:17 | 1:32 | 6:00 |
| Maximum | 52:22 | 9:30 | :53 | 3:49 | 3:00 | 5:52 | 2:23 | 4:45 | 10:30 | 1:30 | 4:00 | 1:3 | 6:00 |
| Minimum | 35:07 | 6:00 | :39 | 1:22 | 1:45 | 2:45 | 1:54 | 2:50 | 5:50 | 1:15 | 2:30 | 1:- | 6:00 |

Behavioral Changes Reflected In Time




Target Time: Minutes 10 Seconds 30 Subject D

## PROGRAM EXPENSES

| | |
|---|---|
| 250 COLORED SLIDES (PURCHASE AND PROCESSING) | 65.00 |
| JOB TRAINING MANUAL ILLUSTRATIONS | 75.00 |
| 1ST PRINTING OF THE MANUAL | 35.00 |
| REPLACEMENT OF CLEANING SUPPLIES | 10.00 |
| TRANSPORTATION @ 10¢ A MILE | 16.00 |
| CERTIFICATES OF COMPLETION | 2.00 |
| | $203.00 |

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# PROTOTYPE EVALUATION OF PROCEDURES FOR TEACHING WORD MEANING SKILLS TO MENTALLY RETARDED AND NORMAL PUPILS[1]

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Prepared for Presentation at The

Council for Exceptional Children

Annual International Meeting

April 22-27, 1973

Dallas, Texas

[1]The research reported herein was performed pursuant to a grant from the National Institute of Education, U.S. Department of Health, Education, and Welfare (NIE No. 202340. Contract No. OEG-0-71-4157 (607)). Grantees undertaking such projects under Government sponsorhsip are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

# PROTOTYPE EVALUATION OF PROCEDURES FOR TEACHING WORD MEANING SKILLS TO MENTALLY RETARDED AND NORMAL PUPILS

Charlotte L. Williams
University of Georgia

The purpose of this paper is twofold: (a) to briefly describe our research on word meaning skills for Year 1 and Year 2, and (b) to summarize the results of our completed research in this area. The papers which follow present the results of research with other reading skills.

The discussion below is organized around two word-meaning skills, learning synonyms and learning homonyms. This discussion draws, in part, from appropriate sections from the monograph published in the Journal of Research and Development in Education entitled Special Reading Instructional Procedures for Mentally Retarded and Learning Disabled Children. Therefore, acknowledgement is made to authors of the sections: Blake, Allen, Hurley, Frye, and Tucker.

## Description of Research Conducted in Years 1 and 2

### Synonyms

#### Description

Learning synonyms means learning relations between known words and unknown words. Synonyms are words which are generally alike in meaning and, in most places, interchangeable.

Shades of meaning cause problems in dealing with synonyms. One reason we have so many synonyms is because words have come into English from a variety of languages. Various languages are not the same. It follows that many synonyms differ somewhat in precise meanings. Thus, we have near-synonyms. During Year 1, we held shades of meaning in abeyance. We focused only on rather general synonyms.

When he learns synonyms, the student uses these processes.

1. He goes through the response learning stage. That is, he learns the particular known words and the synonyms he is dealing with.
2. He goes through an associative hook-up stage. That is, he pairs the particular known words and their synonyms.

Important intervening variables include meaningfulness, short-term memory, interference, and response availability.

Cross-Connection of Domains

Learning synonyms can be cross-connected with paired-associate learning.

Evidence

There is a considerable body of knowledge about retardates' paired-associate learning. For example, there is evidence demonstrating, for CA-equated groups, that retardates do not show an acquistion deficit as long as verbal learning materials are pictorial or non-verbal or meaningful and concrete (Akutagawa and Benoit, 1959; Baumeister, 1967; and Cantor and Ryaan, 1962). However, as soon as a symbolic element is introduced, there is fairly consistent evidence of a sizable deficit (Baumeister and Berry, 1968; Blake and Williams, 1969; Miller, Hale, and Stevenson, 1968; and Semmel and Williams, 1968). Rate of forgetting is more rapid for retardates than for CA-equated groups (Scott and Scott, 1968).

For MA-equated groups, evidence is less consistent. Some studies indicate no deficit (Blake and Williams, 1969; and Miller, Hale, and Stevenson, 1968). Others indicate a small deficit (Baumeister, 1968; Johnson and Blake, 1960; and Prehm, 1966, 1967). Ma-equated groups do not differ on retention (Scott and Scott, 1968).

Independent Variables

Listed below are specific and general variables which influence students' facility in learning synonyms. In this list, one asterisk indicates a variable examined in Year 1; two asterisks, a variable examined in Year 2. We will determine priorities for the other variables and design studies investigating them in Year 3, and thereafter.

--Specific Variables

1. Meaningfulness
   - **a. Frequency
   - **b. Association Value
   - *c. Familiarity
   - **d. Pronunciability
   - e. Sequential Dependencies
   - f. Vividness-Imagery
   - g. Concreteness/Abstractness
2. Form Class
3. Organization
   - a. Coding
   - *b. Mediation
   - c. Clustering
   - d. Stimulus Selection
4. Within-task Similarity
   - a. Formal Similarity
   - b. Meaningful Similarity
   - c. Conceptual Similarity
   - d. Associative Similarity

--General Variables

1. Acquisition
    a. Structure
    b. Discovery and Exposition
    c. Instructions and Intent: Acquisition
    d. Verbal Mediation and Organization: Short Term Memory
    **e. Amount of Material
    **f. Whole and Part Methods
    **g. Amount of Practice
    h. Distribution of Practice
    i. Recitation
    j. Feedback
    k. Time Allocations
2. Retention of Learning
    a. Type of Retention Measure
    b. Instructions and Intent: Retention
    c. Reminiscence
    d. Verbal Mediation and Organization: Retention
    e. Degree of Original Learning: Retention
    f. Conditions Influencing Proactive and Retroactive Inhibition
        1) Intertask similarity
        2) Degree of original learning: Inhibition
        3) Number of interpolated tasks
        4) Degree of learning on interpolated tasks
        5) Distribution of practice
3. Transfer of Learning
    a. Instructions and Intent: Transfer
    b. Verbal Mediation and Organization: Transfer
    c. Similarity Relations
    d. Degree of Original Learning

# Homonyms

## Description

Homonyms are words which are both alike and different. They sound alike when they are pronounced but they have different spellings and different meanings. Most often, the differences in spelling are quite small: one or two letters may be different (too, two); the position of the letters may differ (brake, break). We have two categories, homonyms and near-homonyms. However, for Year 1, we did not make such fine distinctions in the research program.

When he learns to deal with homonyms, the student learns to differentiate between words' physical (visual) characteristics. He uses these processes. (In reading the processes, consider these sets: apent--to stand; epent--letter paper.)

1. He identifies the distinctive features, the features on which the words differ: e.g., apent and epent differ on their initial letter, a/e, as do, for instance, affect and effect.
2. He responds differentially to the distinctive features: e.g., he responds to apent as meaning to stand and to epent as meaning letter paper.

Important intervening variables include attention and short-term memory.

## Cross-Connection of Domains

Learning homonyms can be cross-connected with discrimination learning.

## Evidence

For CA-equated groups, retardates perform less adequately than do normals on discrimination learning (Miller, Hale, and Stevenson, 1968).

Results are inconclusive for MA-equated groups. Data for several studies suggest a deficit for retardates (Gardner, 1945; Girardeau, 1959; House and Zeaman, 1958; Luria, 1959; and O'Connor and Hermelin, 1959). Data from other studies do not report a deficit (Balla and Zigler, 1964; Lunzer and Hulme, 1967; Miller, Hale, and Stevenson, 1968; Plenderleith, 1956; Sanders, Ross, and Heal, 1965; Stevenson, 1960; and Stevenson and Zigler, 1957). House and Zeaman (1958) point up the fact that the deficit, when it occurs, seems to be more pronounced at the lower IQ levels.

Independent Variables

Students' facility in discrimination learning is influenced by the following specific and general variables. Note: Again, one asterisk indicates a study conducted in Year 1; two asterisks, a study in Year 2.

--Specific Variables

*1. Distinctive Features

**2. Relevant and Irrelevant Features

**3. Redundancy

4. Transformations

5. Dimensionality of Stimuli

*6. Contiguity

7. Sequence and Structure

--General Variables

1. Acquisition

    a. Structure

    b. Discovery and Exposition

    c. Instructions and Intent: Acquisition

    d. Verbal Mediation and Organization: Short Term Memory

**e. Amount of Material

f. Whole and Part Methods

**g. Amount of Practice

h. Distribution of Practice

i. Recitation

j. Feedback

k. Time Allocations

2. Retention of Learning

a. Type of Retention Measure

b. Instructions and Intent: Retention

c. Reminiscence

d. Verbal Mediation and Organization: Retention

e. Degree of Original Learning: Retention

f. Conditions Influencing Proactive and Retroactive Inhibition

1) Intertask similarity

2) Degree of original learning: Inhibition

3) Number of interpolated tasks

4) Degree of learning on interpolated tasks

5) Distribution of practice

3. Transfer of Learning

a. Instructions and Intent: Transfer

b. Verbal Mediation and Organization: Transfer

c. Similarity Relations

d. Degree of Original Learning

## Summary of Research Completed in Year 1

### Synonyms

Several specific studies involving synonyms have been completed and are reported in the monograph cited earlier. The titles and investigators for these studies are as follows:

Study 1 Verbal Mediation in the Learning of Synonyms by Retarded and Normal Pupils (Sue Frye)

Study 2 Stimulus Familiarization and Retarded and Normal Pupils' Synonyms Learning. (Charlotte Williams)

Study 3 Verbal Mediation, Stimulus Familiarization and Retarded and Normal Pupils' Learning Synonyms (Kathryn Blake)

There is insufficient evidence about retardates' performance on tasks involving synonyms learning. However, verbal mediation and familiarization have been reported as being important variables in paired-associate learning, the domain which can be cross-connected with synonyms learning. This is the case for retarded subjects (Kellas and Baumeister, 1969; Kellas and Butterfield, 1970; and Williams, 1973) as well as for normal subjects (Arbuckle, 1971; Cieutat, 1960; Gannon and Noble, 1961; Jenkins and Bailey, 1964; Norcross and Spiker, 1958; Norton and Kjeldergaard, 1961; Schulz and Tucker, 1962a, 1962b; and Schulz, Weaver, and Ginsberg, 1965). The intervening variable here is meaningfulness, which has been well-documented as influencing learning (Braun and Heymann, 1958; Cohen and Musgrave, 1964; Sarason, 1958; and Underwood and Schulz, 1960). Further, some evidence suggests an interaction between IQ level and meaningfulness (Lipman, 1963; Mordock, 1968; and Prehm, 1966).

## Procedures

Procedures for these three studies are summarized below.

Target Groups--Briefly, the target groups were: (a) intellectually retarded subjects, (b) intellectually normal subjects equated with the retardates on MA, and (c) intellectually normal subjects equated with the retardates on CA. These target groups were described in the earlier overview paper and in more detail by Allen (1973). All design requirements on the subject variables, IQ, CA, MA, and reading instructional level, were satisfied for all three studies.

Instrument--The task consisted of ten synonyms pairs. The stimulus members were paralogs of various lengths. The response members were high-frequency English words. The study-test arrangement was used in administering the materials. There were four study lists and four test lists. Pairs were arranged in different orders on the respective study lists and test lists. Table 1 has a summary of the material.

Table 1

Synonyms Pairs and Mediators (Code Words)

| New Word | Code Word | Synonym |
|---|---|---|
| elmte | elephant | big |
| tribbach | true | right |
| galtase | game | fun |
| jecil | jet plane | fast |
| grefaeng | grandfather | old |
| stinnove | story | tell |
| porvash | policeman | guard |
| spakcine | spot | place |
| hof | hospital | sick |
| basdemis | ball | round |

Treatments--Treatments for the several studies were as follows:

Study 1: Verbal Mediation

Treatment 1: Three practice trials with the verbal mediators were given to subjects prior to the second trial.

Treatment 2: One practice trial with the verbal mediators was given to subjects prior to the second trial.

Study 2: Stimulus Familiarization

Treatment 1: Three familiarization lists of the stimulus words (new words) in Table 1 were administered to subjects prior to the second trial. (mediators were not used)

Treatment 2: One familiarization list of the stimulus words was administered to subjects prior to the second trial.

Study 3: Verbal Mediation and Stimulus Familiarization

Treatment 1: A practice list with the verbal mediators was presented to subjects prior to the second trial.

Treatment 2: A familiarization list with the stimulus words was presented to subjects prior to the second trial.

## Results

A treatments by levels research design was used for all three studies. The response measure was the number correct on the test list for each of the four trials. The possible score was ten for any one trial. The level for rejecting the null hypothesis was the .05 level. The results of the several studies may be summarized as follows.

Study 1: Verbal Mediation

1. For each amount of verbal mediation, the CA-equated normal subjects performed more adequately than did the retardates and MA-equated normal subjects, who performed similarly.

2. The two amounts of mediation, three verbal mediation practice lists and one verbal mediation practice list, had similar effects.

3. The significant interaction suggests that CA-equated normal subjects used the mediation training more effectively than did the MA-equated normal and retardate subjects.

Study 2: Stimulus Familiarization

1. For each amount of familiarization, the retarded and MA-equated subjects did not differ while both groups performed less well than did the CA-equated subjects.

2. Three stimulus familiarization lists (Treatment 1) were more effective than one familiarization list (Treatment 2).

3. The interactions suggest that the three target groups responded differentially to the two treatments. It appeared that retardates' performance across the trials was not enhanced by three presentations of the stimulus items while possibly the MA-equated subjects and certainly the CA-equated normal subjects benefited from such familiarization training.

Study 3: Stimulus Familiarization and Verbal Mediation

1. Within each treatment, the CA-equated subjects showed a higher level of attainment and faster rate of learning than the other two groups. The MA-equated subjects exceeded the retarded subjects in attainment levels and rate of learning.

2. Verbal mediation is more effective than stimulus familiarization for all three target groups in terms of both amount and rate of learning.

3. The interactions suggest that the facilitating effect of verbal mediation was more pronounced in the CA-equated group than in the MA-equated and retarded groups. This facilitating effect was similar for the latter two groups.

## Homonyms

There are several completed studies of homonyms learning reported in the previously cited monograph. Titles and authors for these are:

Study 1: Amount of coding in learning of homonyms by retarded and normal children (Jacqueline Tucker)

Study 2: The influence of contiguity of instances on the learning of homonyms by retarded and normal pupils (Oliver Hurley)

Study 3: Coding, contiguity, and retarded and normal pupils' learning of homonyms (Kathryn Blake)

These studies are summarized below.

Although there is insufficient evidence concerning retardates' homonyms learning, it can be demonstrated that they show a deficit in the cross-connected domain, discrimination learning. Discrimination learning is facilitated when contiguity of words or when distinctive features are emphasized (Gibson, 1969). This is the case for both retarded and normal groups (Bishop, 1964; Gibson, 1969; Ullman and Routh, 1971).

### Procedures

Target Groups -- Again, the target groups are those described by Allen (1973) and discussed earlier: (a) intellectually retarded, (b) MA-equated subjects, and (c) CA-equated subjects. Fore each study, all design requirements for the subject variables, IQ, CA, MA, and reading instructional level, were met.

Instrument -- The task consisted of ten sets of low-meaningfulness paralogs. These materials were organized in a study-test arrangement. There were four study lists. A test list followed each study list. The pairs in the respective study lists and test lists were arranged in different orders. Table 3 contains the sets of homonyms with their definitions, which were high-frequency English words.

Table 3

Homonyms and their Definitions

| | | | | | |
|---|---|---|---|---|---|
| 1. | dite | throw | 6. | meeg | time |
| | dight | table | | meag | under |
| 2. | eggare | light | 7. | rebary | window |
| | eggair | spash | | rebery | hard |
| 3. | zaring | high | 8. | tolbe | walk |
| | zearing | second | | toulbe | book |
| 4. | brombel | story | 9. | eppoat | heard |
| | bromble | find | | ippoat | cold |
| 5. | ciber | write | 10. | chuy | leaves |
| | siber | help | | chy | play |

Treatments -- The treatments for the studies were these:

Study 1: Coding

Treatment 1: four study lists with the distinctive features coded by underlining (e.g., dite, dight). The members of the homonyms sets were contiguous (i.e., next to each other in the sequence).

Treatment 2: one study list with distinctive features coded by underlining and three not coded. Again, members of the homonyms sets were contiguous.

Study 2: Contiguity

Treatment 1: four trials with contiguous presentation of members of the homonyms sets.

Treatment 2: one trial with contiguous presentation of members of the homonyms sets.

Study 3: Contiguity and Coding

Treatment 1: four trials with contiguous presentation of members of the homonyms sets.

Treatment 2: four trials with contiguous presentation of members of the homonyms sets. In addition, the distinctive features were coded by underlining.

## Results

Again, a treatments by levels research design was used. The response measure was the number correct on the test list for each of the four trials. The possible score was twenty for any one trial. Results of the three studies are summarized below.

Study 1: Coding

1. The CA-equated normal group performed more adequately than did the other two groups, who performed similarly.

2. Coding for one trial was as effective as coding for four trials.

3. The significant interaction reflects the differential rate of learning for the groups: The CA-equated normal group learned more rapidly than did the other two groups.

Study 2: Contiguity

1. The retarded and MA-equated normal groups performed similarly, while both groups performed less well than did the CA-equated group.

2. Subjects receiving contiguous presentation of members of homonyms sets for one trial performed similarly to subjects receiving contiguous presentations on one trial and non-contiguous presentations on three trials.

3. The interaction reflects the differential rate of learning for the groups across trials. The CA-equated groups exceeded the other two groups in both rate and amount learned while these latter groups did not differ.

Study 3: Coding and Contiguity

1. Generally, the CA-equated normal group exceeded the other two groups in both amount learned and rate of learning. The retardates and MA-equated normal groups did not differ in these respects.

2. Across the groups, subjects receiving the two treatments, coding and contiguity, did not differ.

3. The interaction portrays the differential effect on the treatments across the groups: The CA-equated group scored higher with coding than with contiguity. Conversely, the MA-equated normal group scored higher with contiguity. The retarded group scored similarly with coding and contiguity.

## Conclusions

The results of the several studies on word meaning skills are summarized in Table 3. These results support the following conclusions.

Synonyms

1. For retarded, younger normal, and older normal pupils, one verbal mediation training trial enhances synonyms learning as much as do three trials.

2. The three groups respond differentially to the two amounts of stimulus familiarization. Three stimulus familiarization practice trials enhance synonyms' learning for older normal and, possibly younger normal pupils more than does one practice trial. However, three practice trials do not increase synonyms learning for retardates more than one practice trial.

3. Verbal mediation enhances synonyms learning more than does familiarization. This facilitating effect is less pronounced for retarded and younger normal pupils and more pronounced for older normal pupils.

4. Generally, verbal mediation and stimulus familiarization enhance synonyms learning. Retardates are least able to benefit from these methods in terms of both amount learned and rate of learning. MA-equated normal subjects tend to improve and older normal subjects learn much more rapidly with these methods.

Homonyms

1. For retarded, younger normal, and older normal pupils, coding for one trial is as effective as coding for four trials.

2. For the three groups, contiguous presentation for one of four trials is as effective as contiguous presentation for four trials.

3. When learning homonyms, coding is more useful to older normal pupils; contiguity is more useful to younger normal pupils; and coding and contiguity are similarly useful to retarded pupils.

Table 3

Summary of Results: Word Meaning Skills

| Word Meaning Skill | Study | Source | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Group | Treatment | G X Tr | Trials | G X Tl | T X Tl | G X Tr X Tl |
| Synonyms | 1. Verbal Mediation | S | NS | NS | S | S | NS | NS |
| | 2. Stimulus Familiarization | S | S | NS | S | S | NS | S |
| | 3. Mediation and Familiarization | S | S | NS | S | S | S | S |
| Homonyms | 1. Coding | S | NS | NS | S | S | NS | NS |
| | 2. Contiguity | S | NS | NS | S | S | NS | NS |
| | 3. Coding and Contiguity | S | NS | NS | S | S | NS | S |

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